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INTERACTIONAL AERODYNAMICS OF THE SINGLE ROTOR HELICOPTER CONFIGURATION,

VOLUME II- B - Harmonic Analyses of Airframe Surface Pressure Data, Runs 7-14, Mid Section

Philip F./Sheridan

P.O. Box 16858
Phildelphia, Pa 19142

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Prepared for

APPLIED TECHNOLOGY LABORATORY

U. S. ARMY RESEARCH AND TECHNOLOGY LABORATORIES (AVRADCOM)

Fort Eustis, Va. 23604

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APPLIED TECHNOLOGY LABORATORY POSITION STATEMENT

In 1975 a wind tunnel test program was conducted in the Boeing-Vertol 20-foot V/STOL Wind Tunnel on a 1/5th-scale UTTAS model to investigate and find solutions for several aerodynamic problems encountered during the UTTAS flight-testing. Specifically, these tests focused upon (a) the structure of the hub/rotor wake in the vicinity of the empennage, (b) the formulation of the ground vortex and its relation to hub loads and fuselage loads during transition, and (c) the occurrence of vibratory air pressures from the blade passing over the fuselage. Only portions of the above-mentioned wind tunnel test data were reduced and analyzed in addressing the flight-test problems of the UTTAS aircraft.

Under Contract DAAJ02-77-C-0020, Boeing-Vertol completed analyses on the data to understand more completely the aerodynamic interactions that are involved and to formulate instructions for the guidance of designers in these respects. The results of these studies are applicable to all existing and future single-rotor/tail rotor helicopters. The data have been segregated according to aerodynamic interactions and associated phenomena/problem areas. From this body of knowledge, a generalized set of design guidelines meaningful to the single-rotor helicopter design concept formulation were developed and are included in these reports.

Mr. Robert P. Smith of the Aeronautical Technology Division, Aeromechanics Technical Area, served as project engineer for this effort.

DISCLAIMERS

The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

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PREFACE

The entire report describing the investigation of INTERACTIONAL AERODYNAMICS OF THE SINGLE-ROTOR HELICOPTER CONFIGURATION comprises eight numbered volumes bound as 33 separate documents. The complete list of these documents is as follows:

Volume I, Final Report

Volume II, Harmonic Analyses of Airframe Surface Pressure Data



- A Runs 7-14, Forward Section
- B Runs 7-14, Mid Section
- C Runs 7-14, Aft Section
- D Runs 15-22, Forward Section
- E Runs 15-22, Mid Section
- F Runs 15-22, Aft Section
- G Runs 23-33, Forward Section
- H Runs 23-33, Mid Section
- I Runs 23-33, Aft Section

Volume III, Flow Angle and Velocity Wake Profiles in Low-Frequency Band

- A Basic Investigations and Hubcap Variations
- B Air Ejector Systems and Other Devices

Volume IV, One-Third Octave Band Spectrograms of Wake Split-Film Data

- A Buildup to Baseline
- B Basic Configuration Wake Explorations
- C Solid Hubcaps
- D Open Hubcaps
- E Air Ejectors
- F Air Ejectors With Hubcaps; Wings
- G Fairings and Surface Devices

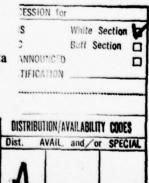
Volume V, Harmonic Analyses of Hub Wake

Volume VI, One-Third Octave Band Spectrograms of Wake Single Film Data

- A Buildup to Baseline
- B Basic Configuration Wake Exploration
- C Hubcaps and Air Ejectors

Volume VII, Frequency Analyses of Wake Split-Film Data

- A Buildup to Baseline
- B Basic Configuration Wake Explorations
- C Solid Hubcaps



D - Open Hubcaps

E - Air Ejectors

F - Air Ejectors With Hubcaps; Wings

G - Fairings and Surface Devices

Volume VIII, Frequency Analyses of Wake Single Film Data

A - Buildup to Baseline

B - Basic Configuration Wake Exploration

C - Hubcaps and Air Ejectors

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SURF	ACE	PRES	SURE	HAR	MONI	. A	NAI	LYS	SES							14

INTRODUCTION

Volume II summarizes the harmonic analyses of the airframe surface pressures measured at 53 locations on the fuselage, nacelles, and empennage of the model. These values are presented in nine volumes resulting from the following division of runs and pressures.

Volume	Runs	Pressure Section
II-A	7-14	Forward
II-B		Mid
II-C		Aft
II-D	15-22	Forward
II-E	n	Mid
II-F	n	Aft
II-G	23-53	Forward
II-H	u	Mid
II-I		Aft

A computer printout sheet is provided for each pressure transducer for every run. The steady and ten harmonic components are given in pounds per square inch. The resultant and its phase angle are shown as well as the sine and cosine. A machine plotted time history with points every three degrees is offered for reference.

The parameters of any run may be found in the list of Test Runs (Table 1), a copy of which appears in each volume.

The designation (PS number) of the pressure sensors within each section are shown below.

Forward	Mid [*]	Aft
Section	Section	Section
004.1	045.1	081.1
013.1	045.2	081.2
013.2	047.1	081.3
013.3	047.2	099.1
015.1	048.1	099.2
017.1	048.2	099.3
017.2	048.3	107.1
017.3	052.1	107.2
017.4	052.2	107.3
017.5	056.1	107.4
017.6	056.2	107.5
017.7	056.3	107.6
023.1	057.1	112.1
023.2	057.2	112.2
023.3	071.1	117.1
023.5 026.1	072.2	117.2

The location of each transducer is shown in the scaled model drawing (Figure 1) and the listing of the transducer locations (Table 2).

The great majority of the pressure data points permitted usable harmonic analysis. Occasionally the computer program would skip a case with too many points beyond the valid voltage bandwidth of the measurement system. This is noted by the words "BANDEDGE". There are also a few cases where a very flat variation indicates an inoperative transducer.

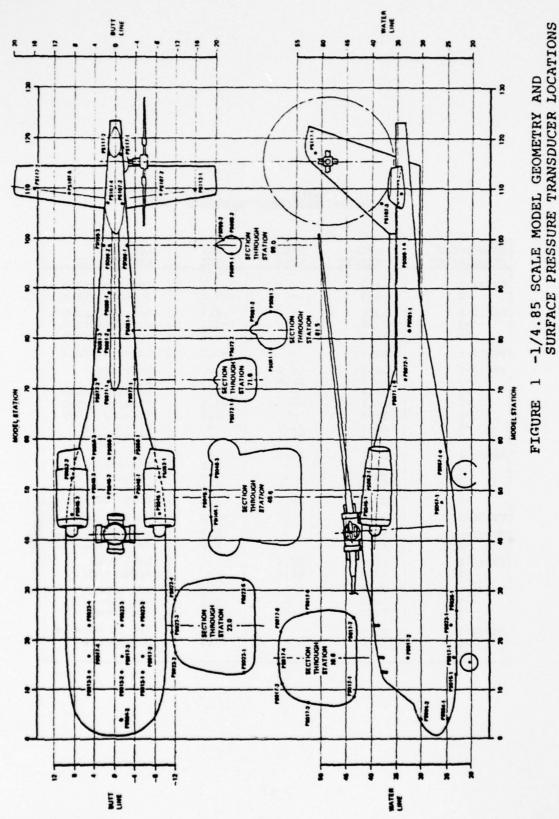
		PRESCRIPES
	RUNS	STIRPACE
TABLE 1	LIST OF TEST RUNS	MEASUREMENT OF UTBRATORY SURFACE PRESSURES
		MEASUREMENT

TAIL	ROTOR	u _O		•		Off	•	•	•				
MR HT.	p/u	8					•			•		•	
MODEL	•	-6.5			-2.0	•	-15	-15	-6.5	-6.5	-2.0	-2.0	
MODEL	• 5	2.2	3.3	2.2	-3.5		-26.5	-26.5	2.2	3.3	-2.0	-3.5	
DISK	pat.	80	10	8		=			:	10		8	и
RPM	MR/TR	1433/	=			1433/0			E		ı		
VTUN	KNOTS	09			160		09				160		
NOTH TUNOO/NOTH WAITSTANCO		$K_1/(a)$ Level flight baseline	" /(b) Max. gross weight level flt. baseline	" /(a) Repeat 7(a)	" /(b) Increase speed to maximum	K2/Repeat high speed baseline with TR off	" /Max. climb at low speed	" /(a) Repeat 10; T.P. 2,3,4,5	" /(b) Repeat 7(a) with TR off, T.P. 6,7,8,9	" /(a) Repeat 7(b) with TR off	" /(b) Max. G.W. at max. speed with TR off	K2+S1/Check longitudinal strakes	K ₂ +S ₂ /Check lateral strakes
RUN	NO.	7		8		6	10	11	=	12		13	14

TABLE 1. CONTINUED
LIST OF TEST RUNS
MEASUREMENT OF VIBRATORY SURFACE PRESSURES

VTUN RPH LDG. APOLES KNOTS KNOTS RR/TR Paff						MODEL	EL	X S	
## KNOTS MR/TR psf a° \$\psi\$ \(\psi\$ \) h/d a ators 160 1433/0 8 -3.5 -2.0 \(\pi\$ a a a ators	CONFIGURATION/CONDITION	LON	Vrun	RPM	LDG	N S	THE S		TAIL
tors 160 1433/0 8 -3.5 -2.0 2.			KNOTS	MR/TR	psf	a.	•	h/d	ROTOR
tors " " " " " " " " " " " " " " " " " " "	K ₃ /Effect of 45° tapered blade root cutout	lade	160	1433/0	80	-3.5	-2.0		Off
inal 160 " " -3.5 -2.0 " ais- " " " " " " " " " " ais- " " " " " " " " " " ais- " " " " " " " " " " " " " " " " " " "	of vortex ard crown	erators						=	-
inal 160 " " -3.5 -2.0 " ais- " " " " " " " " in " " " " " " " " " ad " " " " " " " " "	K ₂ /Autorotation		09		•	21	0		
ais- in	K ₂ +S ₃ /Effect of lower longi strakes	tudinal				-3.5	-2.0		
in " " " " " " ad " " " " " " " " " " " "	$K_{f 4}/{ m Rotor}$ raised 2.5 inches		=						
" " " " " pe	K4+S3/Lower strakes added ted	o rais-							
in " " " be	K ₅ /Rotor raised 5.0 inches				•		•		•
" " " " peeds	K5+S3/Lower strakes with rotor highest position					:			
	K ₂ /Autorotation at maximum	peeds							

	TAIL	ROTOR	Off						=				
	MR HT.	h/d	8				•		-	-	=	-	
	MODEL	•	0		ı		5.9-	-3.2	-2.3	-2.2	-2.1	-1.9	
	MODEL	• 8	5.3	5.0	4.4	3.5	2.2	0.2	9.0-	-1.6	-2.7	-3.5	
SSURES	DISK	LDG.	8			•		•	=	=			
IS PRE	RPM	MR/TR	1433/0						=				
CONTINUED TEST RUN ORY SURF	Varun	KNOTS	20	30	40	50	09	80	100	120	140	160	
TABLE 1. CONTINUED LIST OF TEST RUNS MEASUREMENT OF VIBRATORY SURFACE PRESSURES	NOTHE TONOS / NOTH A GIRD TONOS	CONFIGURATION) CONDITION	K2/Level flight speed sweep							= = =			
	RGN	NO.	24	25	56	27	28	59	30	31	32	33	

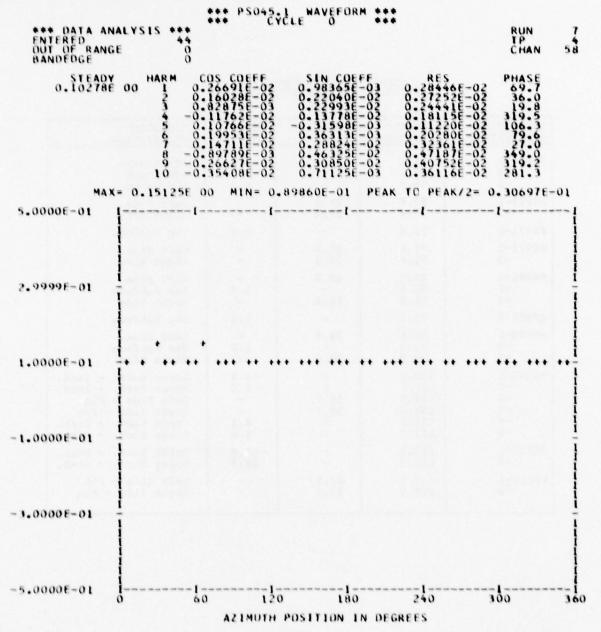


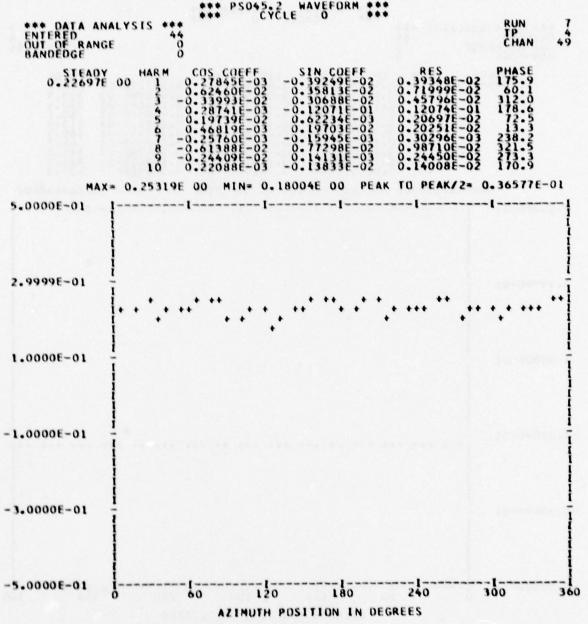
PRESSURE TRANSDUCER LOCATIONS

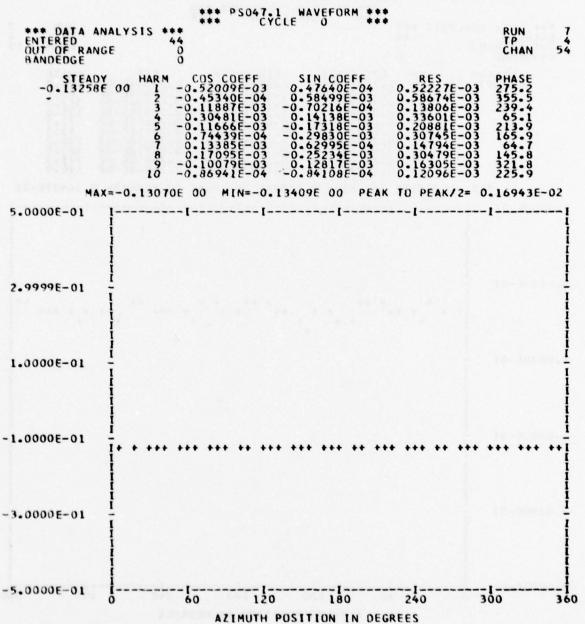
Transducer Designation	MODEL STATION	WATER LINE	BUTT	LOCATION DESCRIPTION
PS004-1 -2	4.0	:	-1.2 -1.2	Lower Surface Upper Surface
PS013-1 -2 -3	13.4 13.4 13.4	=	-5.3 -1.2 5.2	Forward Crown Forward Crown Forward Crown
PS015-1	13.4	-	-1.2	Lower Surface
PS017-1 -2 -3 -4 -5 -6 -7	16.6 16.6 16.6 16.6 16.6 16.6	24.2 33.4 - - 33.4 24.2	-5.3 -1.2 5.2	Left Side Left Side Forward Crown Forward Crown Porward Crown Right Side Right Side
PS023-1 -2 -3 -4 -5	23.0 23.0 23.0 23.0 23.0	25.9	-5.3 -1.2 5.2	Left Side Forward Crown Forward Crown Forward Crown Right Side
PS026-1	26.0	-	-1.2	Under Surface
PS045-1 -2	45.4 45.4	:	-8.7 8.7	Top of Nacelle Top of Nacelle
PS047-1 -2	47.4	26.6 26.6	:	Left Side Right Side
PS048-1 -2 -3	48.6 48.6 48.6	:	-3.9 1.2 4.4	Aft Crown Aft Crown Aft Crown
PS052-1 -2	52.6 52.6	:	-8.7 8.7	Top of Nacelle Top Nacelle

TABLE 2 (CONTINUED)
PRESSURE TRANSDUCER LOCATIONS

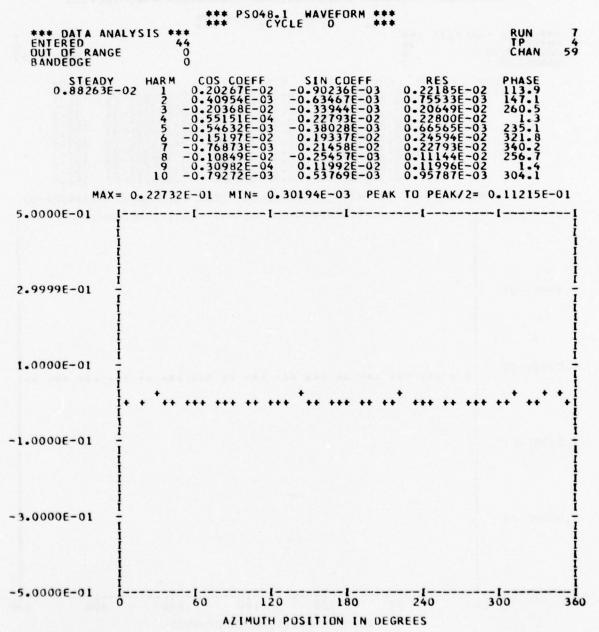
TRANSDUCER DESIGNATION	MODEL STATION	WATER LINE	LINE	LOCATION DESCRIPTION
PS056-L -2 -3	56.2 56.2 56.2	:	-3.9 1.2 4.4	Aft Crown Aft Crown Aft Crown
PS057-1 -2	57.4 57.4	27.0 27.0	:	Left Side Right Side
PS071-1	71.4	-	1.2	Top Surface
PS072-1 -2	71.6	28.9 28.9	1	Left Side Right Side
25081-1 -2 -3	81.5 91.5 91.5	28.9	1.2	Left Side Top Surface Right Side
73089-1	89.4	-	1.2	Top Surface
PS099-1 -2 -3	99.0 99.0 99.0	28.9	1.2	Left Side Top Surface Right Side
PS107-1 -2 -3 -4 -5 -6	109.5 109.5 109.5 109.5 109.5 109.5	38.7	-8.6 -8.6 -8.6 8.6	Lower Surf Stab Upper Surf Stab Laft Side - Fin Right Side - Fin Upper Surf Stab Lower Surf Stab
PS112-1 -2	110.3	:	-15.9 15.9	Upper Surf Stab. Upper Surf Stab.
PS117-1 -2	117.0	47.7	:	Left Side - Fin Right Side - Fin

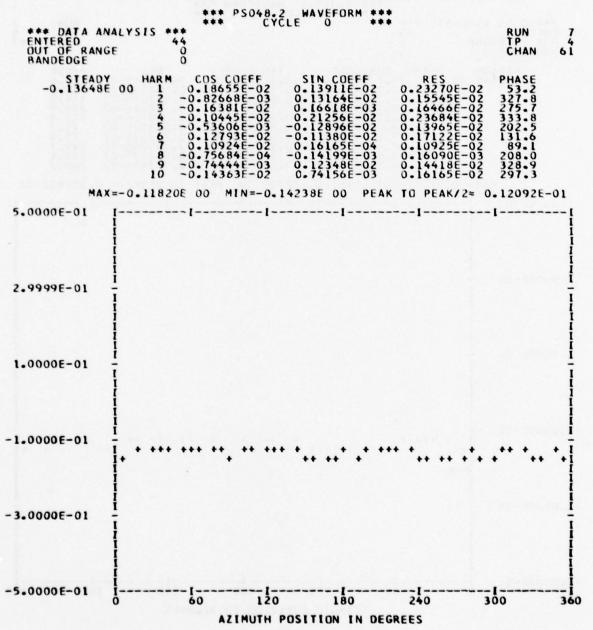


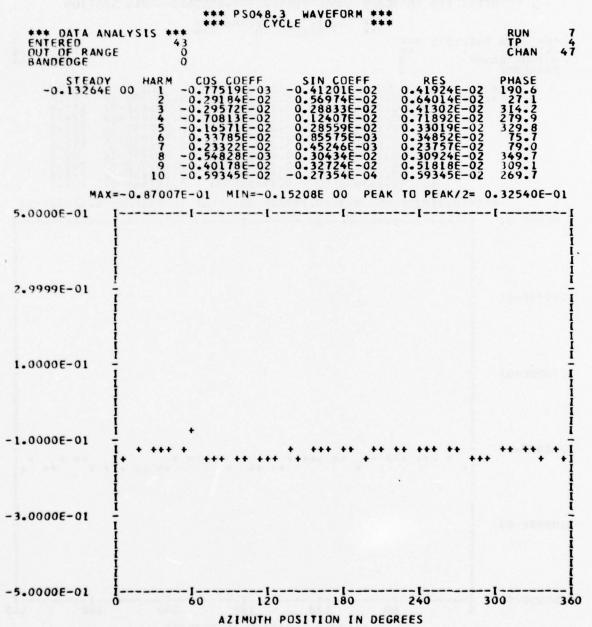


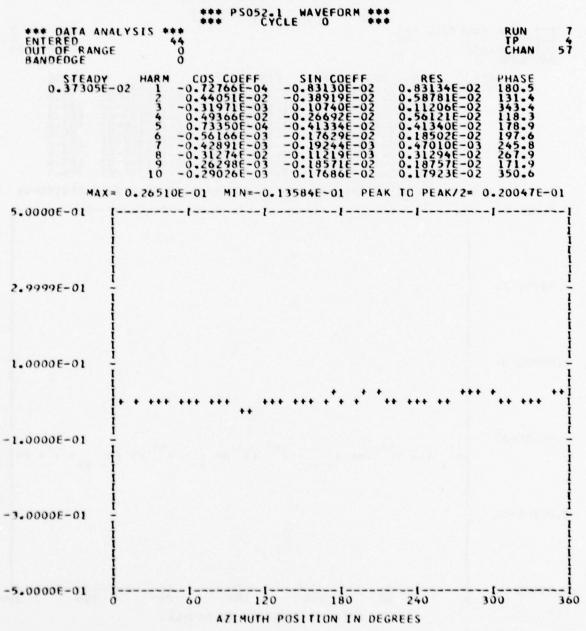


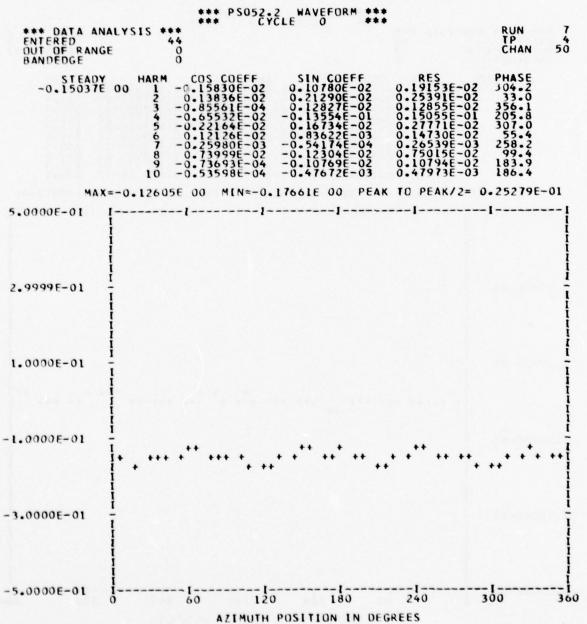
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*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	51
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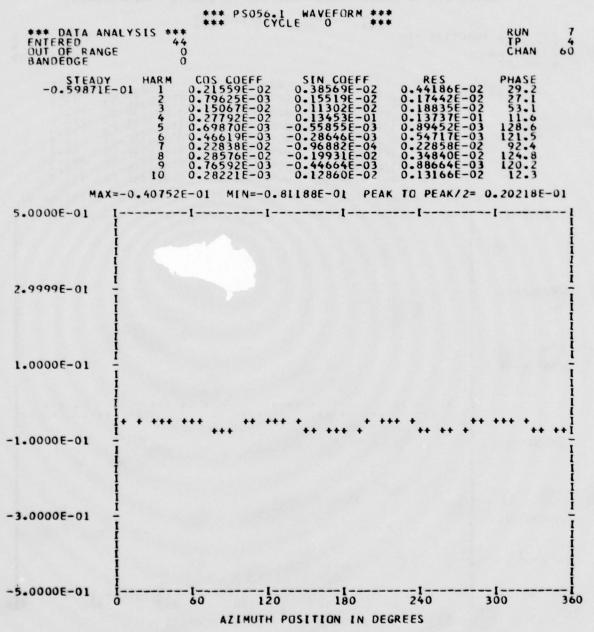


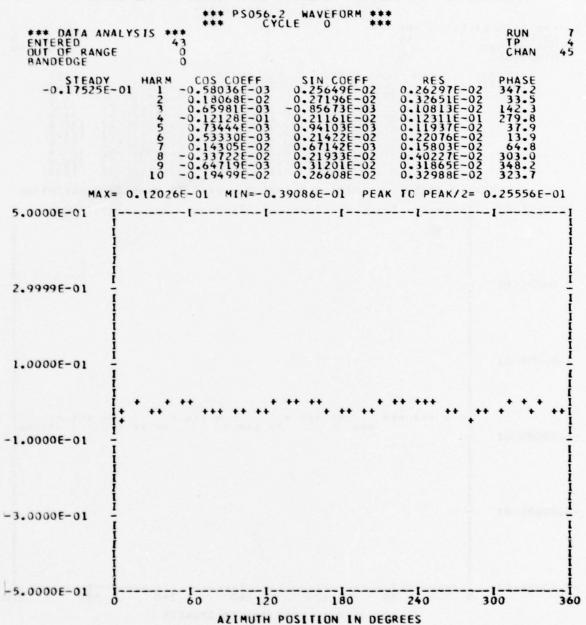




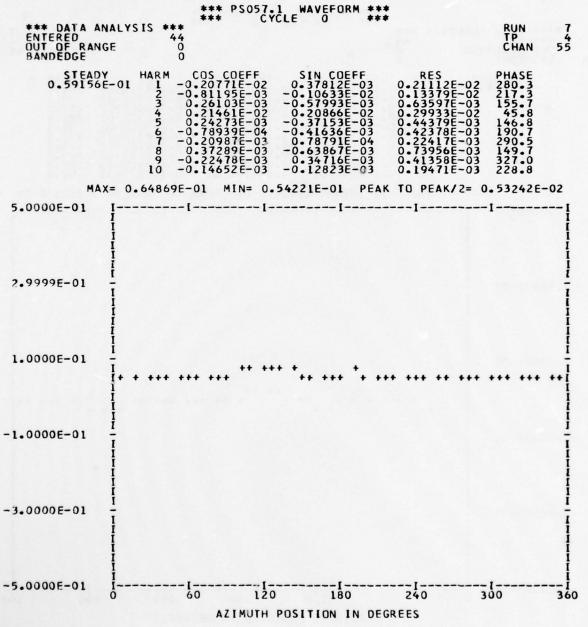


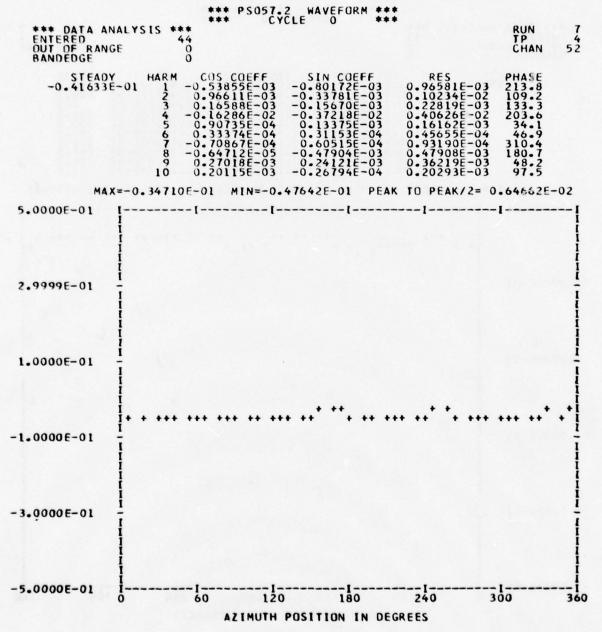


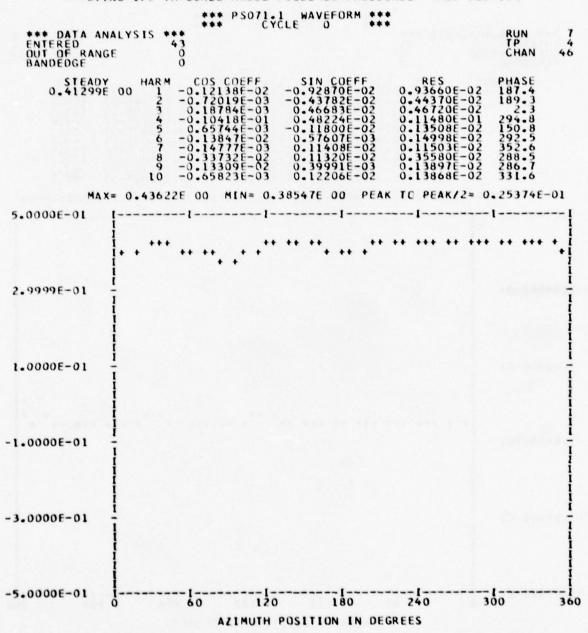


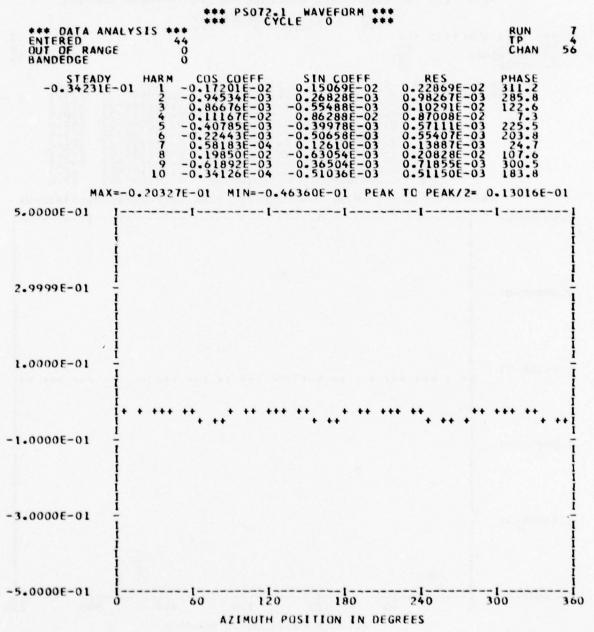


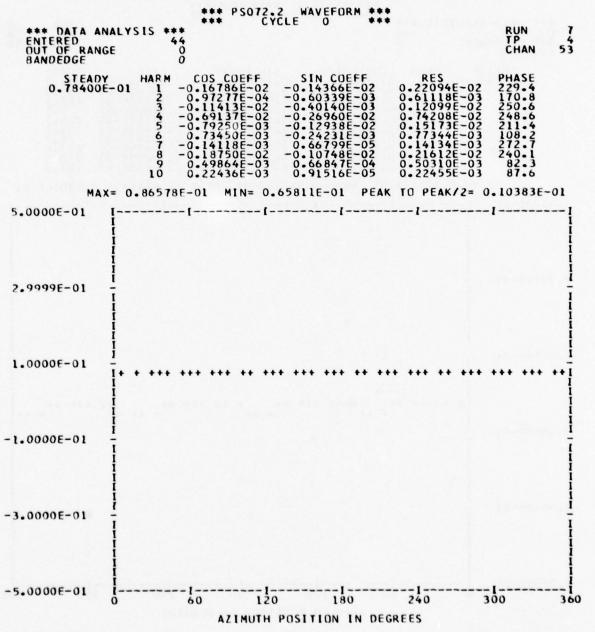
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STEADY HARM COS COEFF SIN COEFF 0.44910E-02 0.78527E-02 0.51148E-02 -0.73309E-03 0.5167IE-02 0.71164E-02 -0.23049E-02 0.74804E-02 0.71164E-02 -0.79481E-02 0.11652E-01 0.90668E-03 0.11124E-02 0.14351E-02 0.12041E-02 0.12041E-02 0.12041E-02 0.22466E-02 -0.10760E-02 0.2247IE-02 0.22466E-02 -0.18937E-02 0.2068E-02 9 0.83458E-04 -0.42180E-03 0.42998E-03 10 0.10635E-02 0.86474E-03 0.13707E-02	PHASE 304.8 98.1 252.0 259.1 327.9 115.5 199.3 168.8 50.8	
MAX= 0.23421E-01 MIN=-0.27046E-01 PEAK TC PEAK/2= 0 5.0000E-01 IIIII		-01
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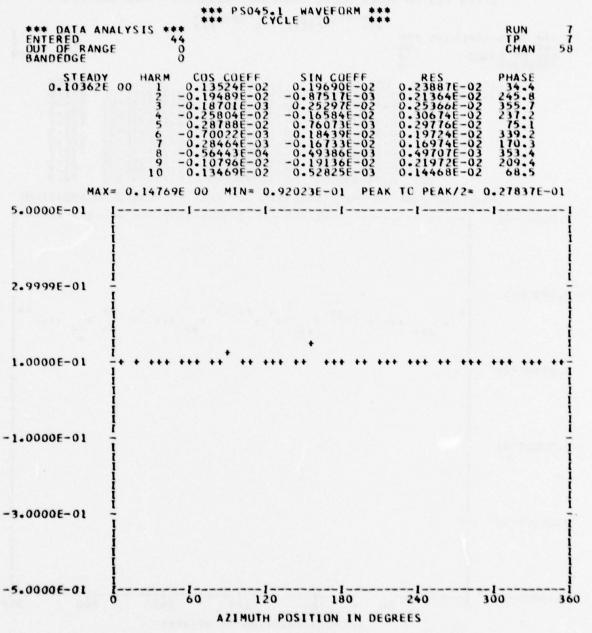


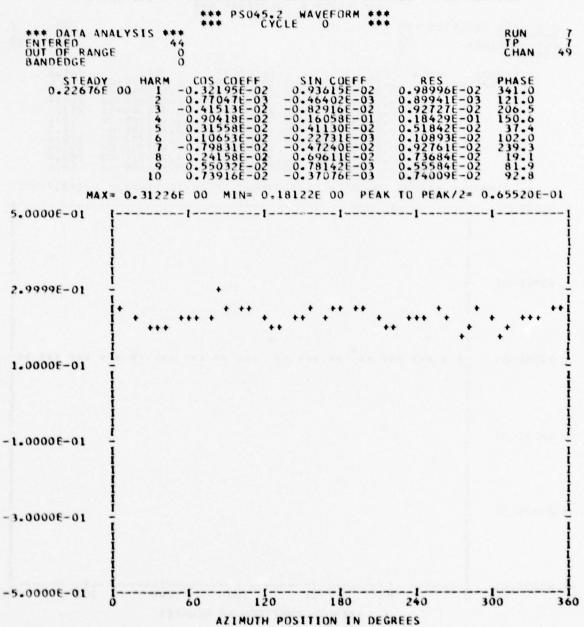


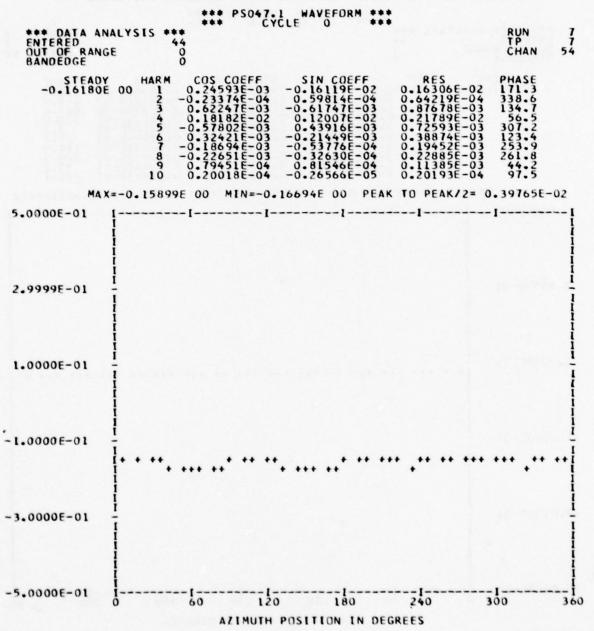




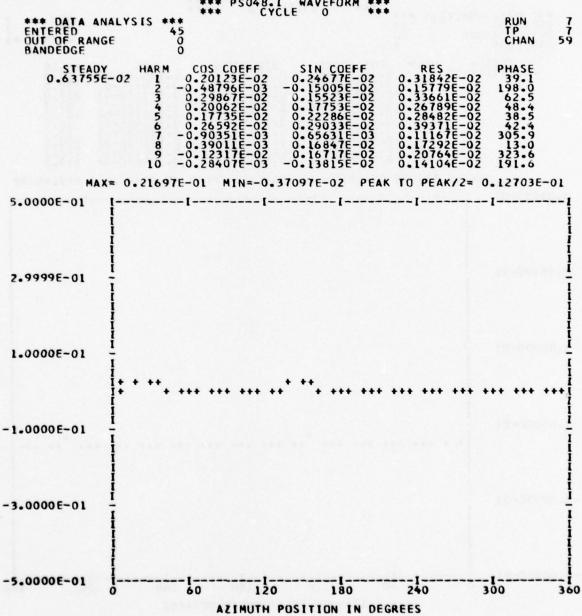


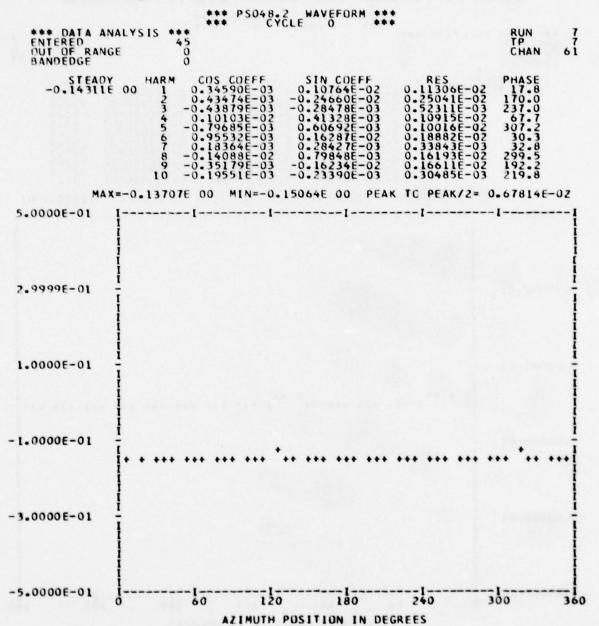


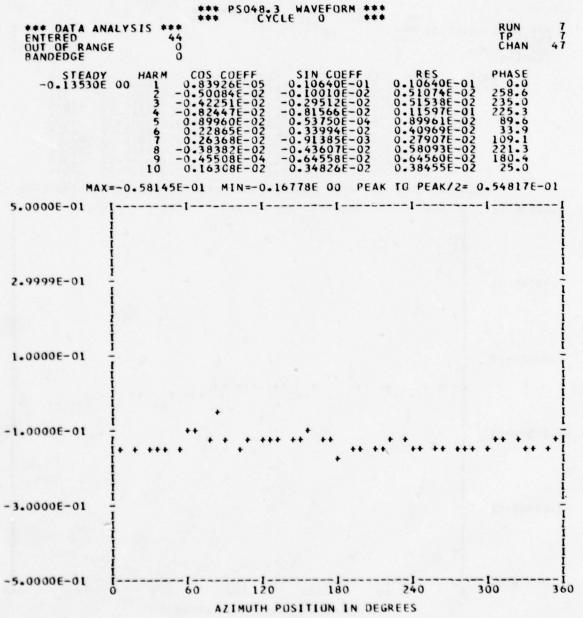


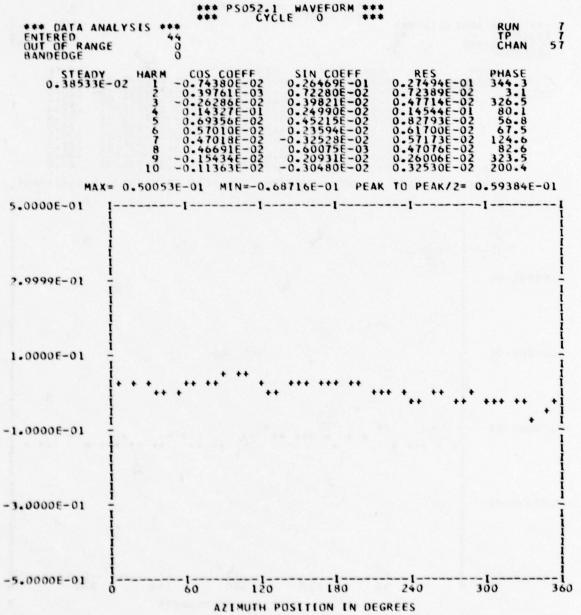


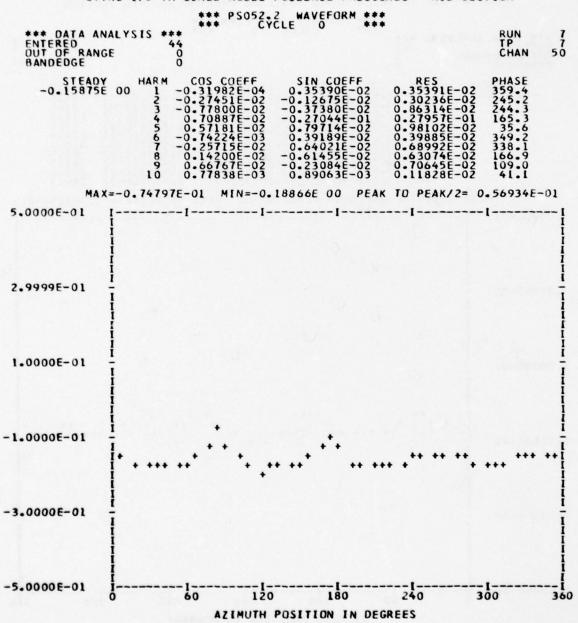
*** PS047.2 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSI ENTERED OUT OF RANGE BANDEDGE	*** CYCLE 0 *** 44 0 0 0	RUN 7 TP 7 CHAN 51
0.68115E-01	ARRM COS COEFF SIN COEFF 0.41289E-03 0.98466E 2 0.47622E-03 -0.78857E-03 0.92121E 3 -0.38950E-03 -0.73627E-03 0.83296E 4 0.22653E-02 -0.13112E-02 0.26174E 5 0.83698E-04 0.57496E-03 0.58102E 6 0.29153E-03 0.11889E-03 0.31484E 7 0.22881E-03 -0.27918E-03 0.36096E 8 -0.40430E-03 -0.32787E-05 0.40431E 9 0.69944E-04 0.83533E-05 0.70441E 10 -0.31598E-03 0.89201E-04 0.32833E	-03 207.8 -02 120.0 -03 8.2 -03 67.8 -03 140.6 -03 269.5 -04 83.1 -03 285.7
5.0000E-01 I	73046E-01 MIN= 0.61699E-01 PEAK TO PEAK/ [[[]	/2= 0.56732E-02
2.9999E-01		
1.0000E-01	*** *** *** *** *** *** *** *** ***	*** *** *** **I
-1.0000E-01		
-3.0000E-01		
-5.0000E-01 Î	AZIMUTH POSITION IN DEGREES	300 360

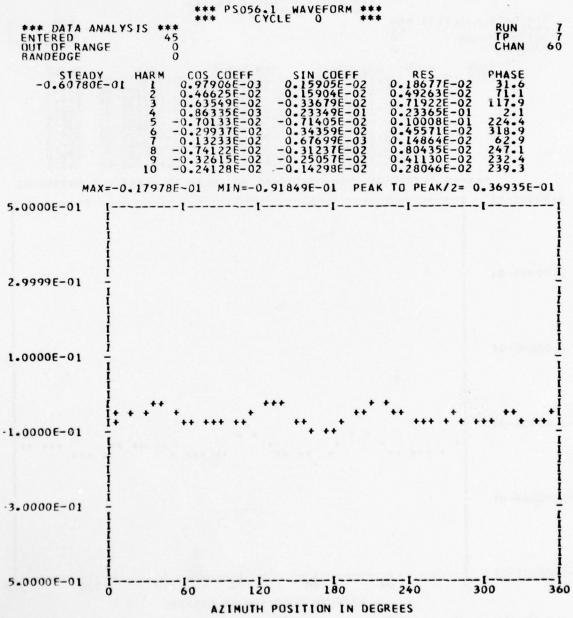




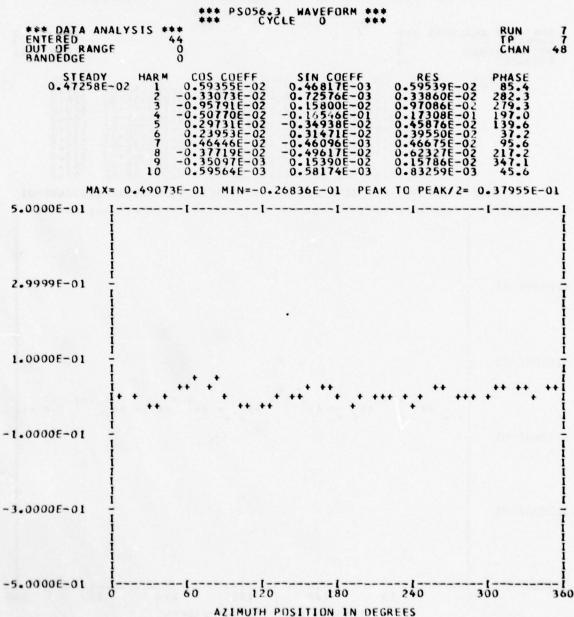


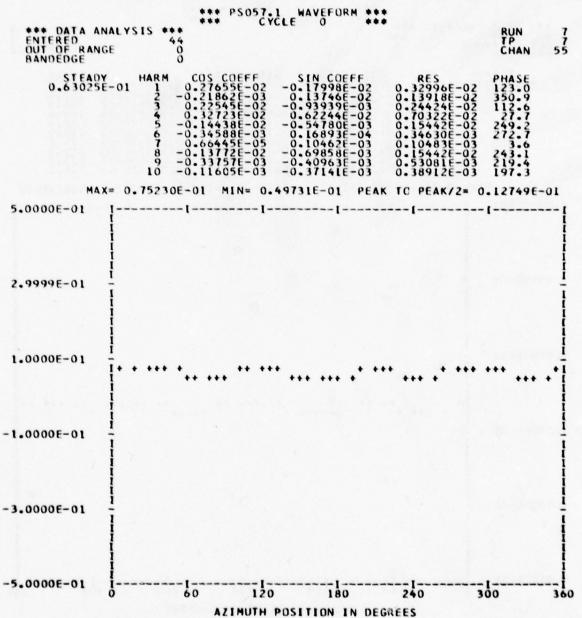


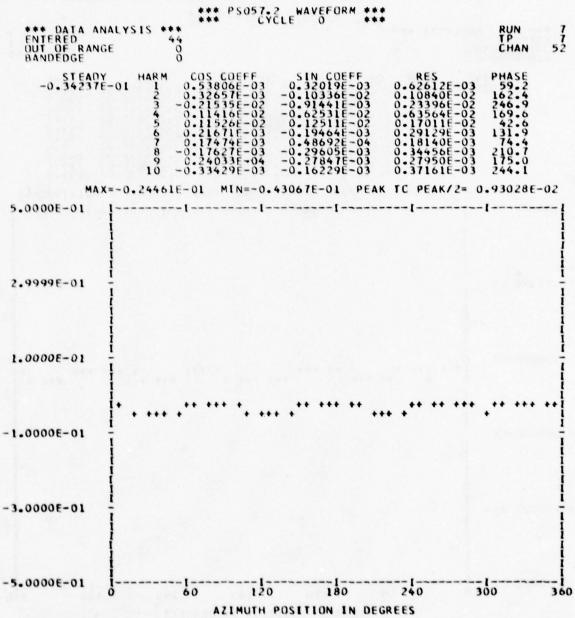


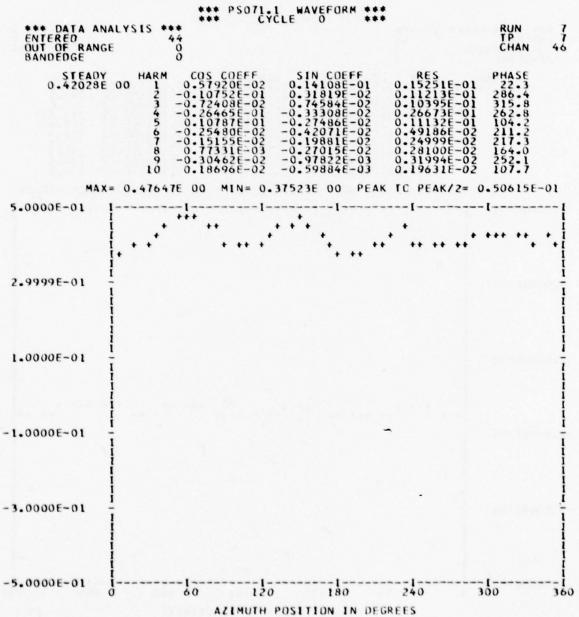


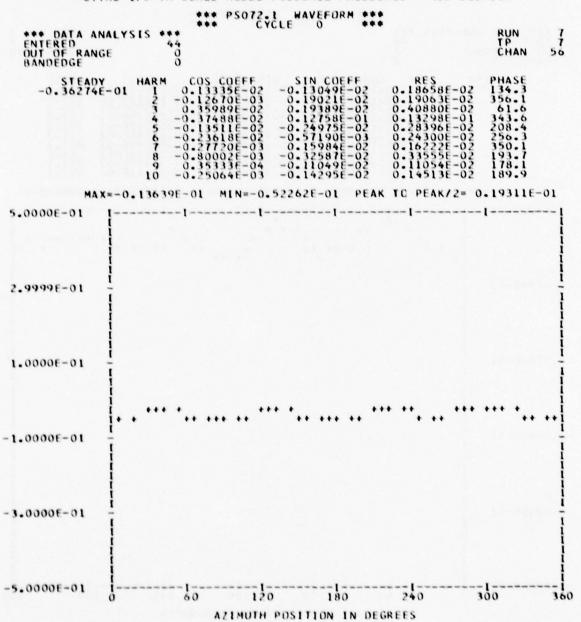
*** PSO56 *** DATA ANALYSIS *** ENTERED OUT OF RANGE OBANDEDGE O	6.2 WAVEFORM *** CYCLE 0 ***	#00 00 m 10 00 1000	RUN TP CHAN	7 7 45
STEADY HARM COS COEFF -0.18592E-01 1 -0.16787E-02 2 -0.59888E-02 3 -0.45947E-02 4 -0.20270E-0 5 0.66133E-02 6 -0.24733E-02 7 -0.10575E-02 8 -0.27247E-02	2 -0.56877E-02 0.55266E-02 1 -0.11138E-02 2 -0.23272E-02 2 -0.19751E-02 -0.1061E-02 3 0.25262E-03	RES 0.22915E-02 0.82593E-02 0.71871E-02 0.20300E-01 0.70108E-02 0.31652E-02 0.15017E-02 0.37156E-03	PHASE 227-1 226-4 320-2 266-8 109-3 231-3 224-7 312-8	
9 -0.26071E-02 10 0.34473E-02 MAX= 0.22299E-01 MIN=-0	2 -0.34389E-03 0.14619E-02	0.26297E-02 0.37445E-02 TO PEAK/2= 0	262.4 67.0	01
5.0000E-01 [l	I	I	1
				i i i
2.9999E-01 I				1
				I
$\frac{1.0000E-01}{1}$				i I
		* **	••••••	••
-1.0000E-01 i				i
				Ĭ Į
-3.0000E-01 i				i
				i
-5.0000E-01 J	II 20 180	I3	l	360
AZIMUT	H POSITION IN DEC	GREES		

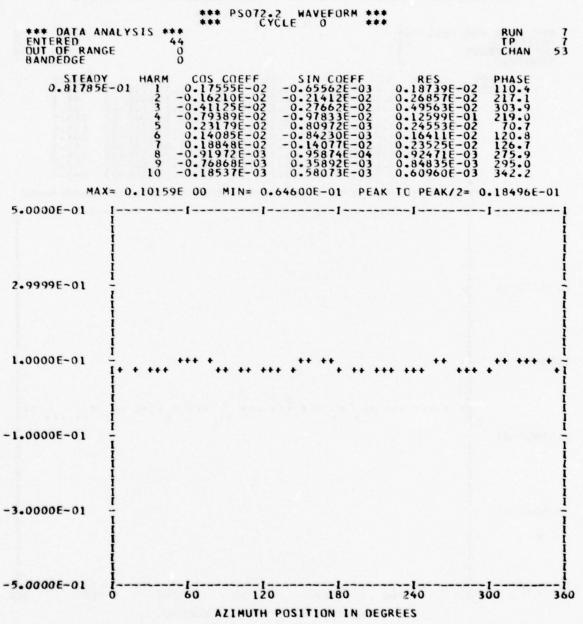


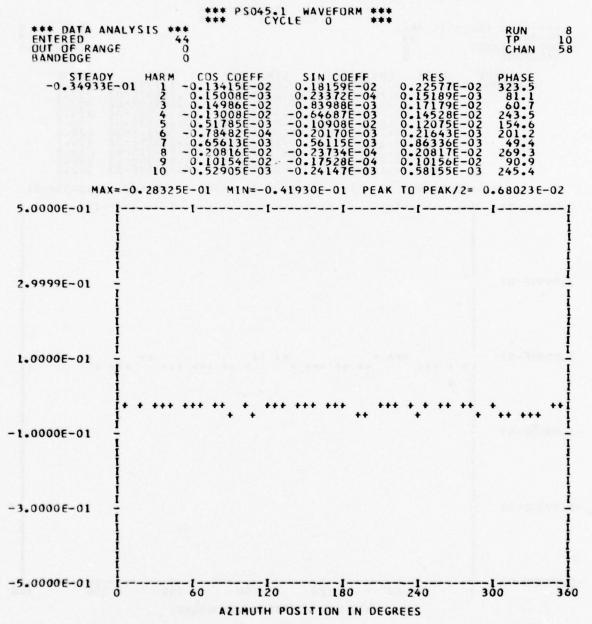


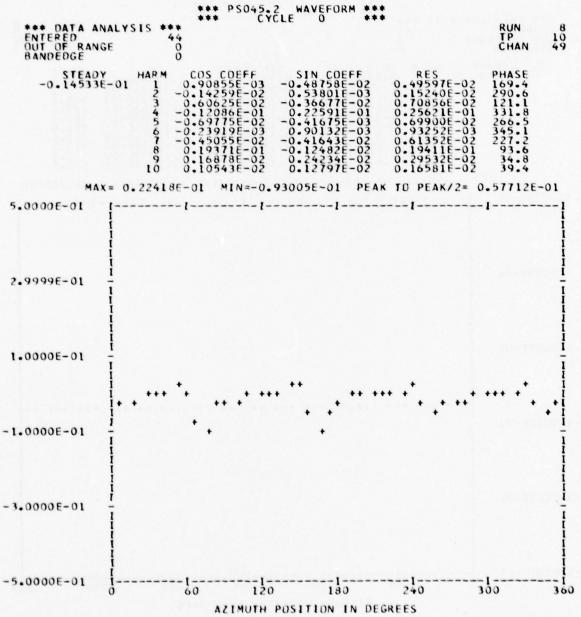


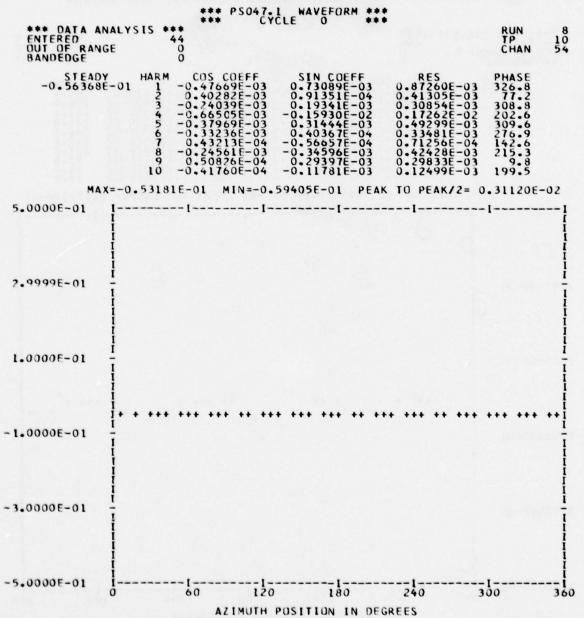


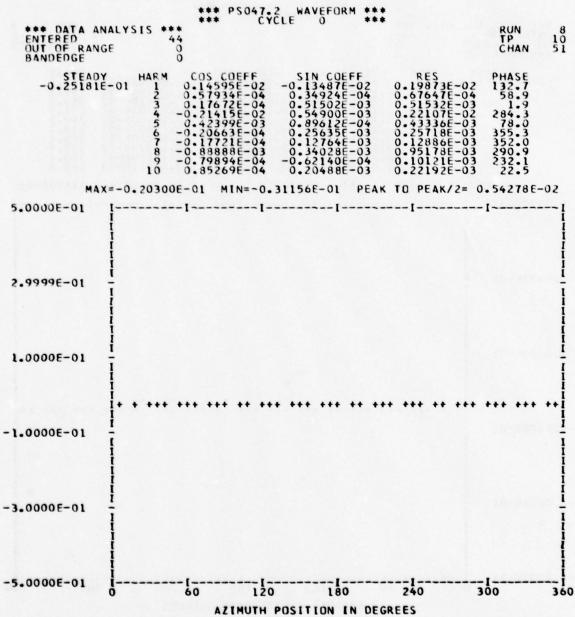


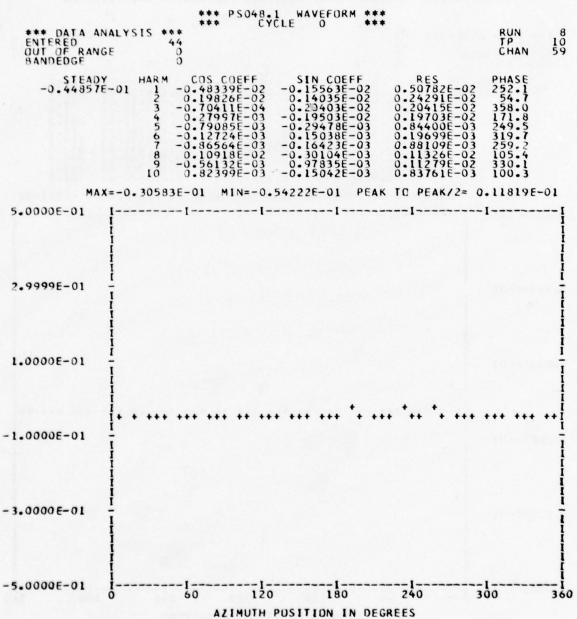


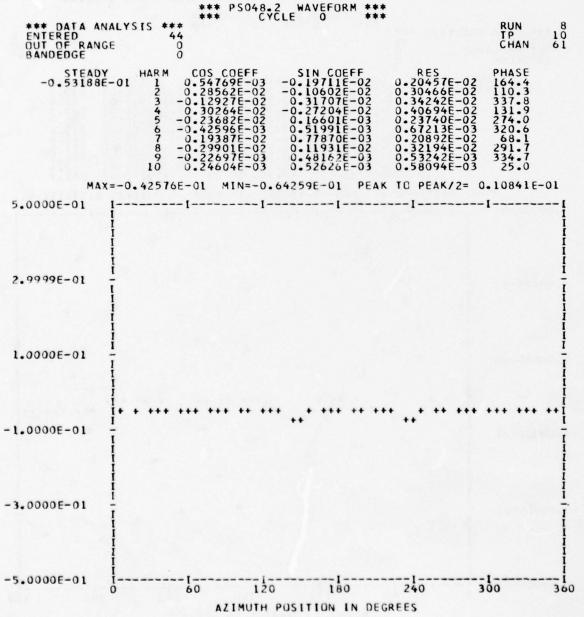


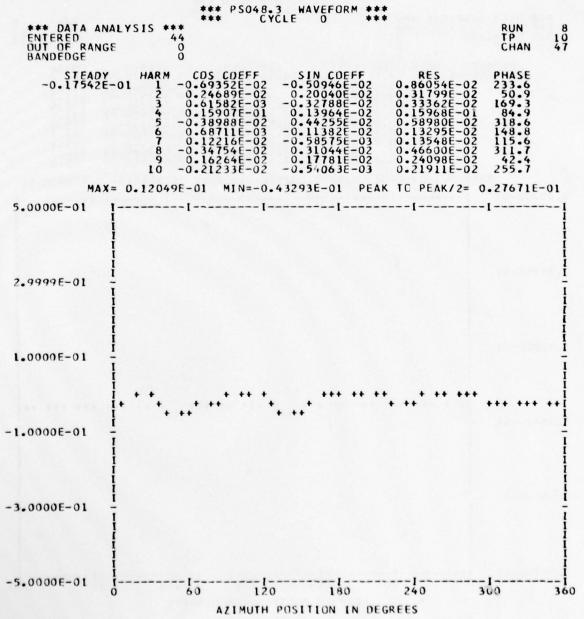


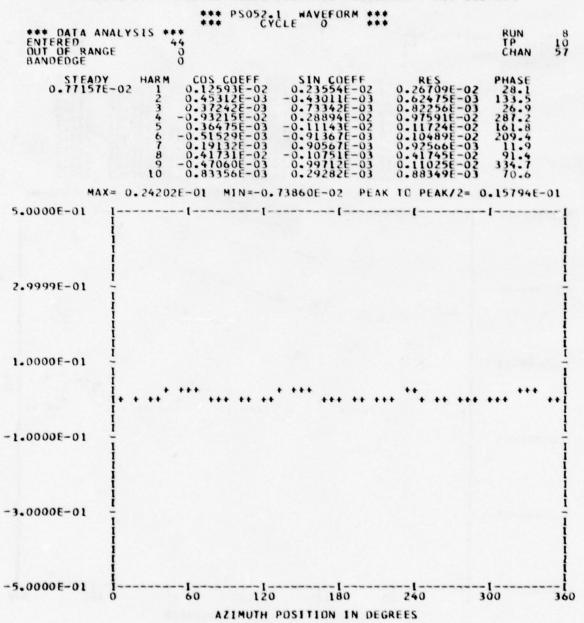


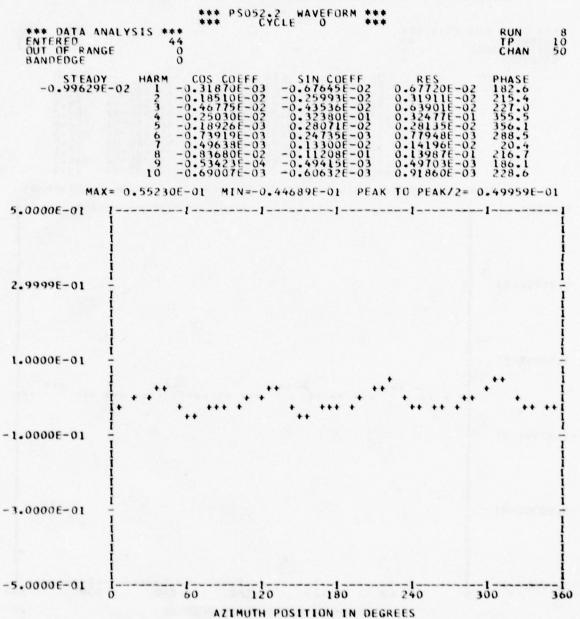




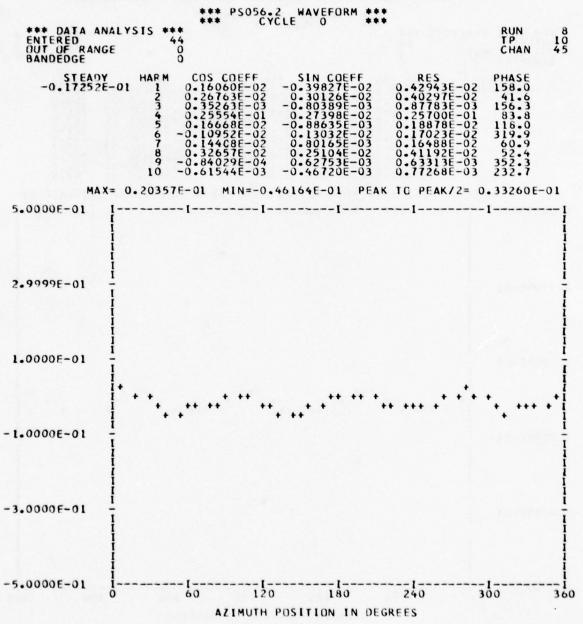


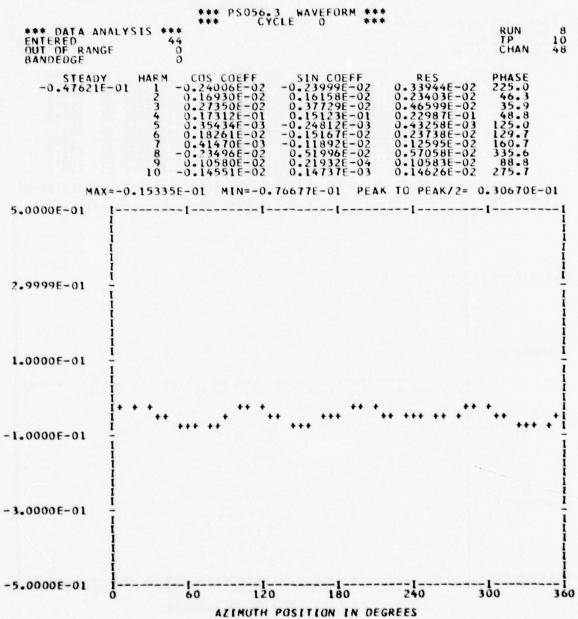


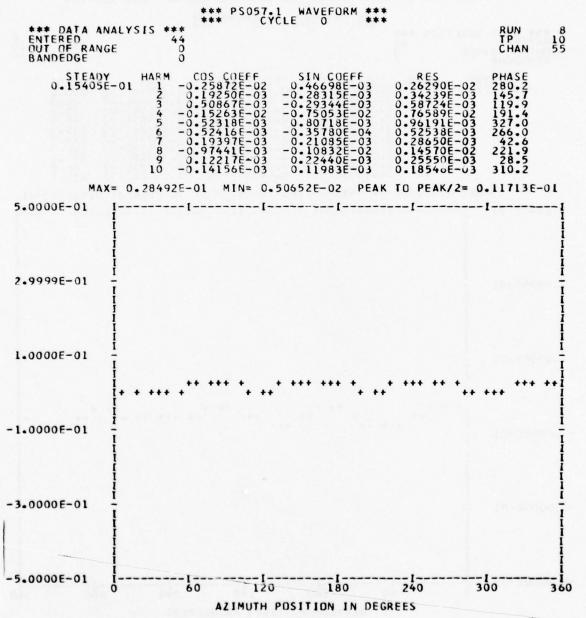


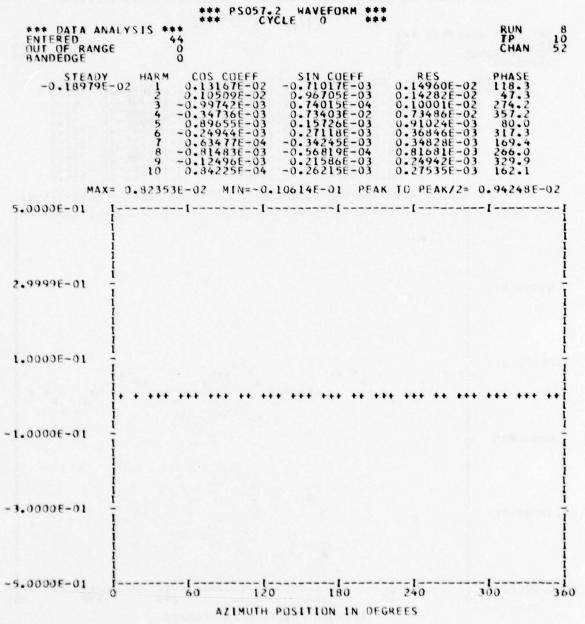


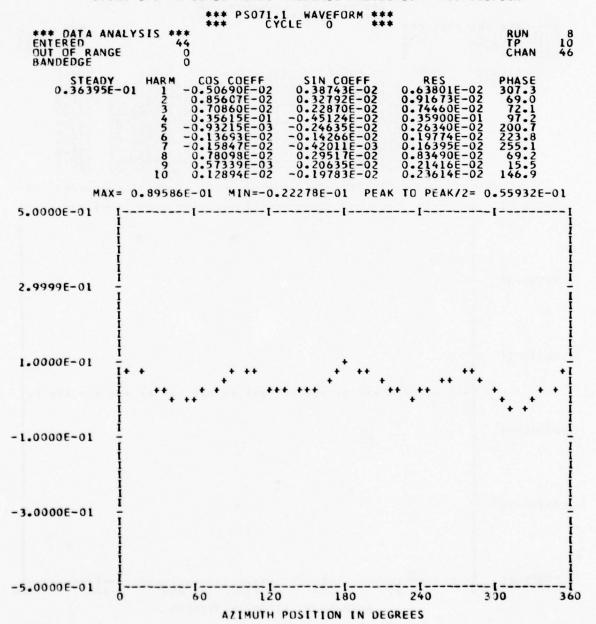
*** PS056-1 MAVEFORM *** ENTERED OUT OF RANGE 0 OUT OF RANGE 0 OUT OF RANGE 0 -0.62438E-02 1 0.26173E-02 -0.56801E-03 0.26783E-02 102.2 2 -0.14382E-02 -0.52190E-03 0.15300E-02 250.0 3 -0.27725E-02 0.12703E-03 0.15300E-01 328.7 5 -0.10580E-02 0.1271E-02 0.16984E-02 325.2 6 -0.4758E-03 0.62878E-03 0.71779F-03 144.5 7 0.65709E-03 0.62878E-03 0.91695E-03 45.7 8 -0.97607E-02 -0.13608E-03 0.91695E-03 45.7 8 -0.97607E-02 -0.13608E-03 0.91695E-03 350.0 MAX= 0.24161E-01 MIN=-0.32803E-01 PEAK TC PEAK/2= 0.28482E-01 5.0000E-01	0111	3 1/2 11	***	25056 1	WAVEE	DDM ***	KC3 HIO 3	COLLON	
2 -0.14382E-02 -0.52190E-03 0.15793E-02 250.0 3 -0.97752E-03 0.12405E-02 0.15793E-02 321.7 4 0.45228E-02 -0.22309E-01 0.22762E-01 168.5 5 -0.10589E-02 0.1571E-02 0.1854E-02 325.2 6 0.44754E-03 -0.62878E-03 0.77179E-03 144.7 7 0.56409E-02 0.15375E-02 0.04595E-03 45.7 10 -0.57607E-03 0.3693E-03 0.36920E-03 358.0 MAX= 0.24161E-01 MIN=-0.32803E-01 PEAK TC PEAK/2= 0.28482E-01 5.0000E-01	ENTERED OUT OF RANGE	4	0	CÝĆ	LE	***		TP	10
2.9999E-01	STEADY -0.62438E-	-02 1 2 3 4 5 6 7 8 9	-0.14382 -0.97752 0.45228 -0.10589 0.65709 -0.58460	2E-02 2E-03 3E-02 9E-02 4E-03 9E-03	-0.5219 0.1240 -0.2230 0.1527 -0.62352 -0.2352 -0.1340	0E-03 5E-02 9E-01 1E-02 8E-03 5E-03 4E-02 8E-02	0.26783E-0 0.15300E-0 0.15793E-0 0.22762E-0 0.18584E-0 0.77179E-0 0.63016E-0 0.14593E-0	2 102.2 2 250.0 2 321.7 1 168.5 3 25.2 3 144.5 3 45.7 2 48.0 2 156.7	
2.9999E-01	MAX:	0.2416	1E-01 M	N=-0.	32803E-0	1 PEAK	TO PEAK/2=	0.28482E-	-01
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2.9999E-01		[1		[[
-5.00000E-01 0	-1.0000E-01	*	.** ***	٠	**	* * **	• •• ** *•	**	++1
0 60 120 180 240 300 360	-3.0000E-01								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
The state of the s	-5.0000E-01	[300	i 360

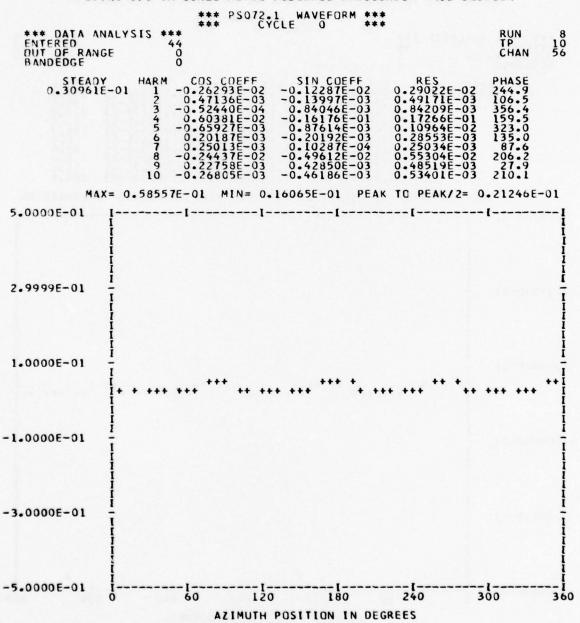


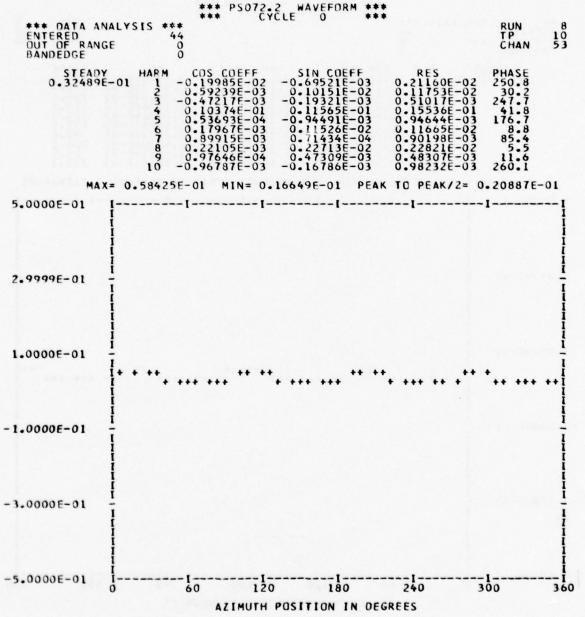




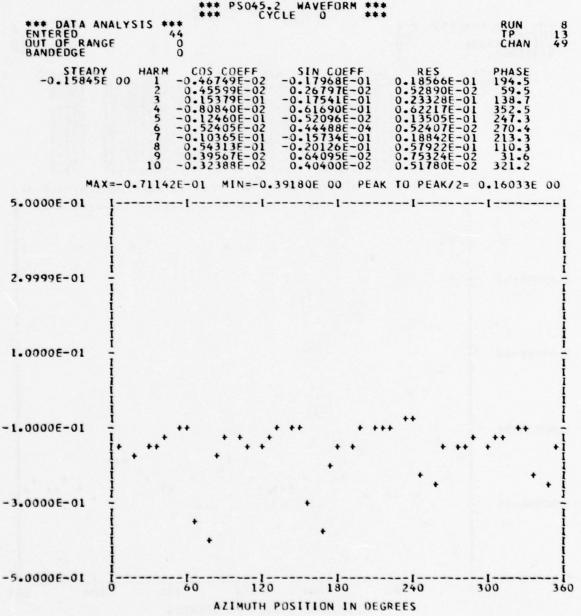


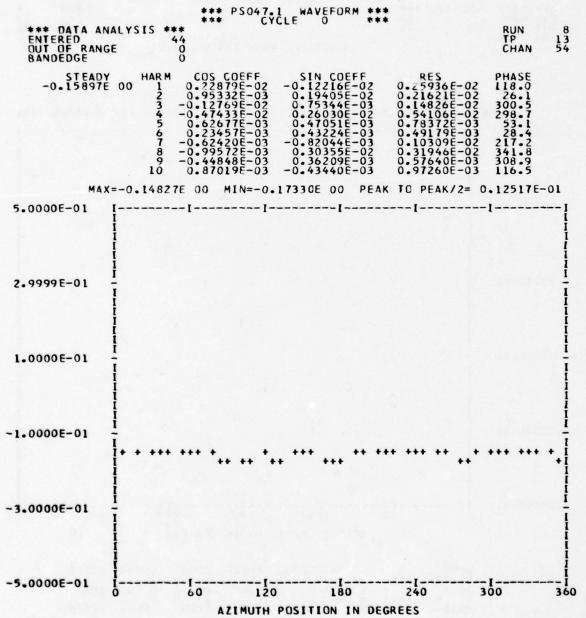






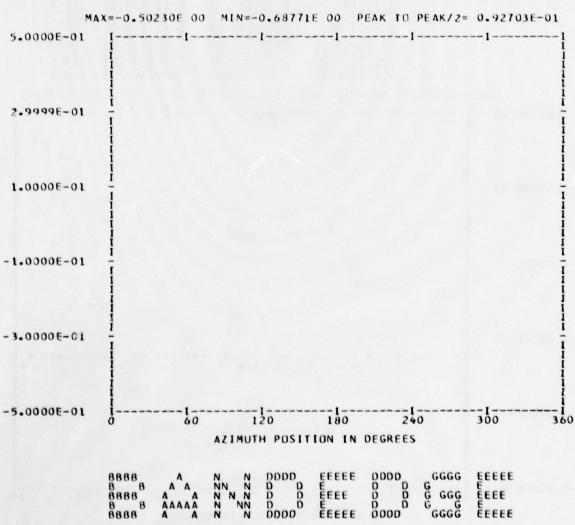
```
*** PS045.1 WAVEFORM ***
CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 0
                     HARM
1
2
3
     -0.24042E 00
             MAX=-0.16074E 00 MIN=-0.34053E 00 PEAK TO PEAK/2= 0.89895E-01
 5.0000E-01
 2.9999E-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                                              180
                                        120
                                                                            300
                                  AZIMUTH POSITION IN DEGREES
```



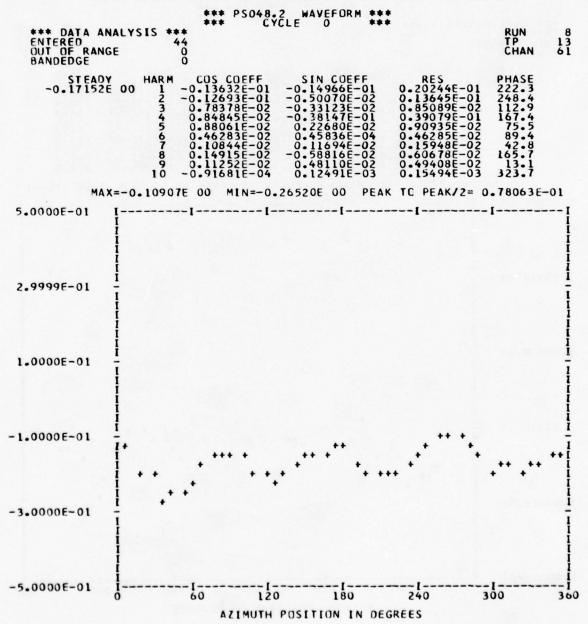


*** PSO47.2 WAVEFORM ***

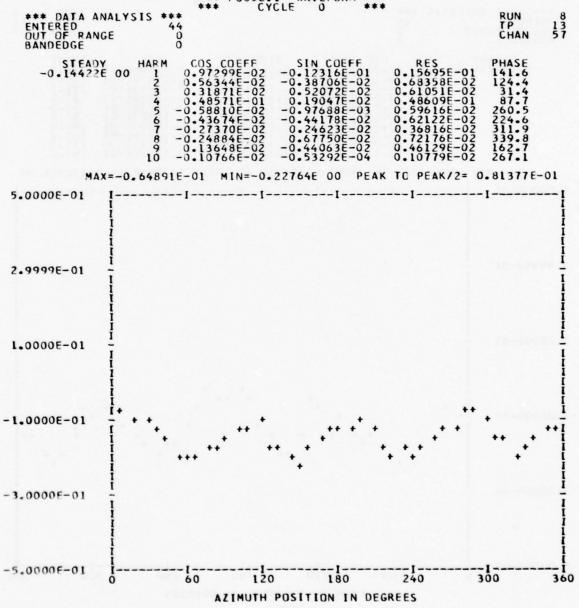
*** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 44
BANDEDGE 42
HARMONIC ANALYSIS SKIPPED

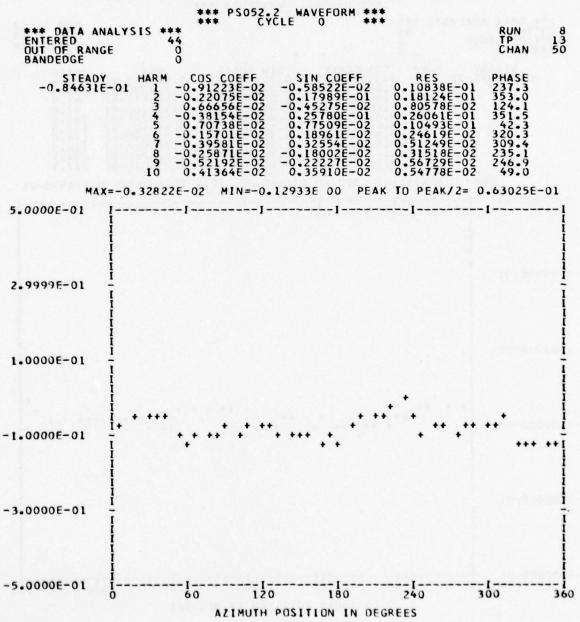


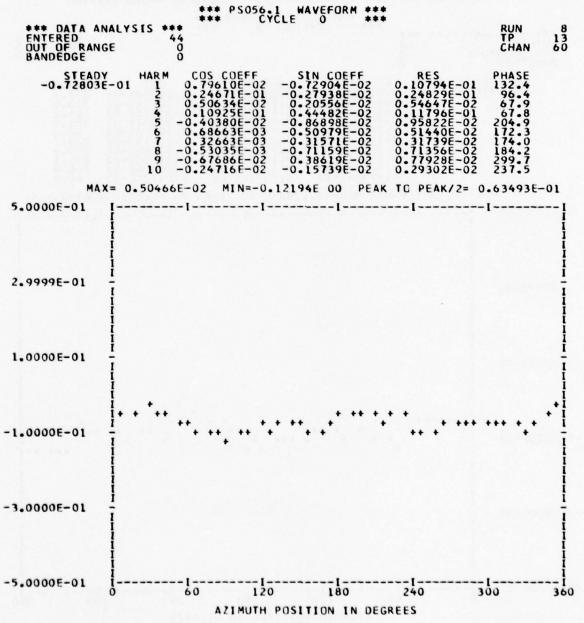
```
*** PS048.1 WAVEFORM ***
CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 0
     -0.15619E 00
            MAX=-0.77041E-01 MIN=-0.27645E 00 PEAK TO PEAK/2= 0.99709E-01
 5.0000E-01
 2.9999E-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                           60
                                      120 180
                                                                         300
                                AZIMUTH POSITION IN DEGREES
```

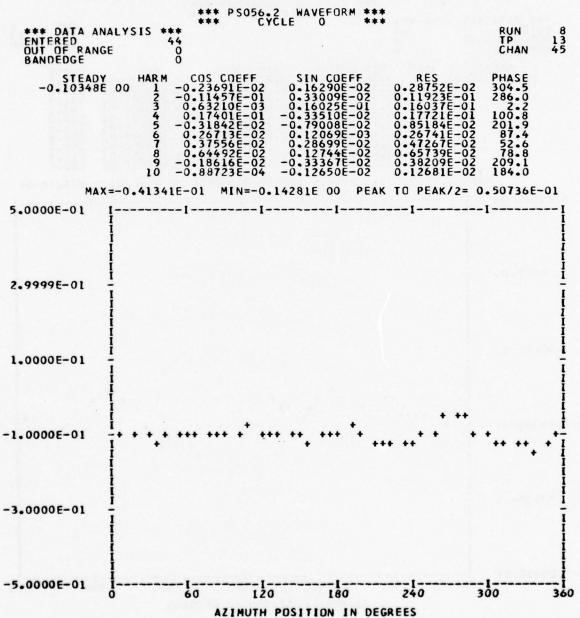


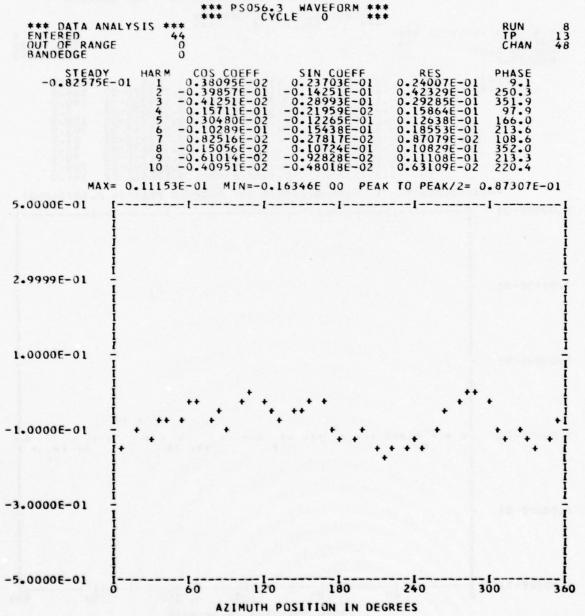
*** PSQ48.3 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	13 47
STEADY HARM COS COEFF SIN COEFF 0.24636E-01 0.24636E-01 0.19896E-01 0.555541E-02 0.11442E-03 0.55553E-02 0.556902E-01 0.38842E-01 0.68895E-01 0.5887E-02 0.28239E-02 0.60838E-02 0.11851E-01 0.13501E-02 0.11927E-01 0.38827E-02 0.14650E-01 0.15036E-01 0.19896E-01 0.0083827E-02 0.14650E-01 0.15036E-01 0.19896E-01 0.108895E-01 0.1088	PHASE 254.4 106.2 271.1 62.3 346.9 261.2 234.0 267.9	
MAX=-0.13730E-01 MIN=-0.25443E 00 PEAK TO PEAK/2= 0 5.0000E-01 [[[•12035E	00
2.9999E-01		
1.0000E-01		<u> </u>
-1.0000E-01	··.	**
-3.0000E-01		
-5.0000E-01 1 1 1 1 240 3: AZIMUTH POSITION IN DEGREES	1	i 360

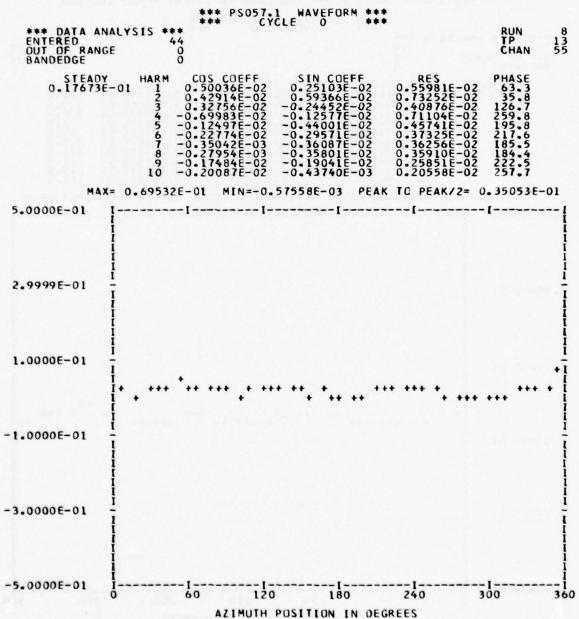


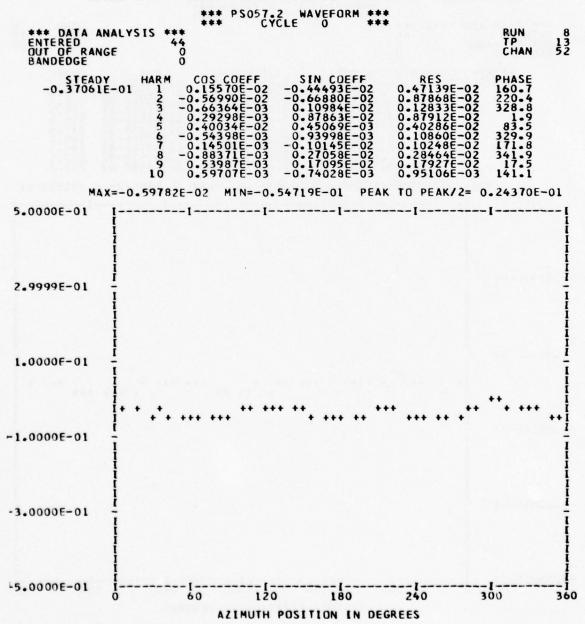


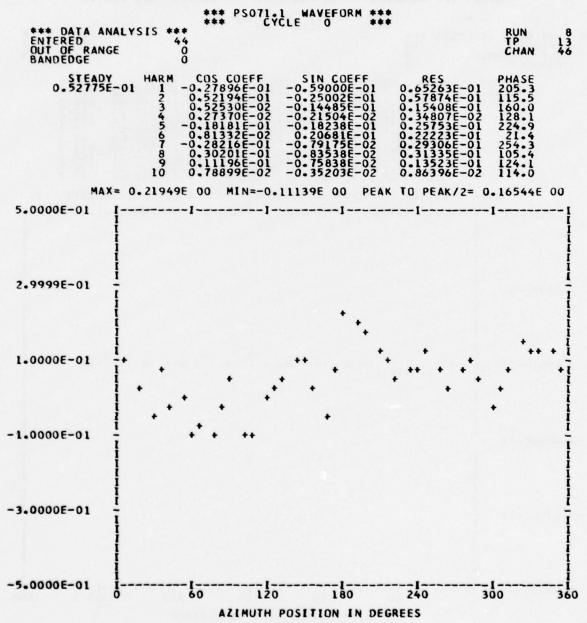




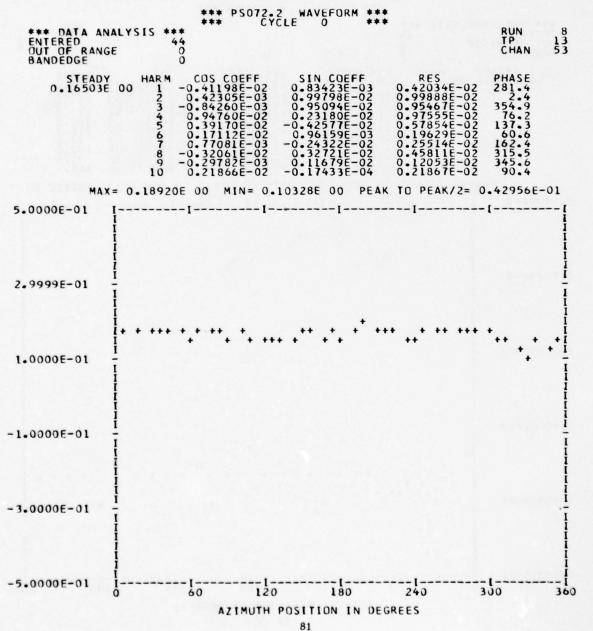


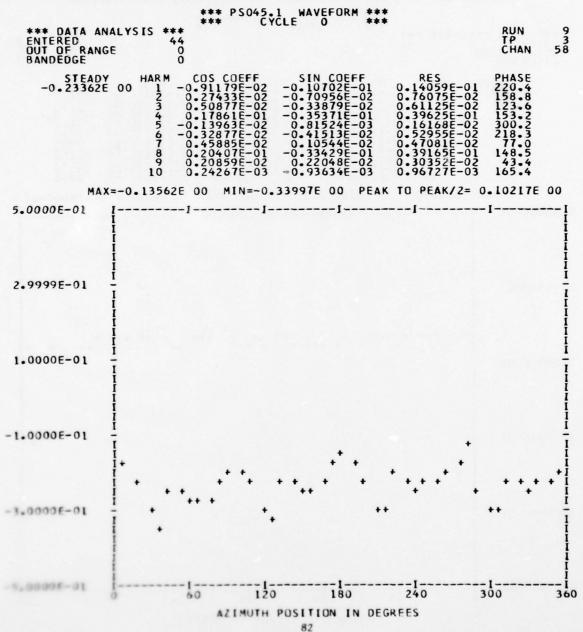






*** PSO72.1 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	8 13 56
STEADY HARM COS COEFF SIN COEFF 0.47031E-02 0.86082E-02 0.98096E-01 1 -0.72098E-02 -0.47031E-02 0.86082E-02 0.66596E-02 0.48343E-03 0.23555E-02 0.24046E-02 0.6592E-02 0.48343E-03 0.23555E-02 0.24046E-02 0.5022IE-02 -0.47733E-02 0.69286E-02 0.21720E-02 0.25842E-02 0.33758E-02 0.21720E-02 0.25842E-02 0.33758E-02 0.19787E-02 0.32628E-02 0.38159E-02 0.10615E-02 -0.26416E-02 0.28469E-02 0.13493E-02 -0.56448E-03 0.14626E-02 0.83296E-03 0.15522E-02 0.17616E-02	PHASE 236.8 193.3 11.5 133.5 28.7 40.0 328.7 112.7 28.2	
MAX= 0.11790E 00 MIN= 0.70361E-01 PEAK TO PEAK/2= 0 5.0000E-01 [[[-01
2.9999E-01	721-220	
-1.0000E-01 = 1	20-000	
-3.0000E-01		11111
-5.0000E-01 i	00	i 360

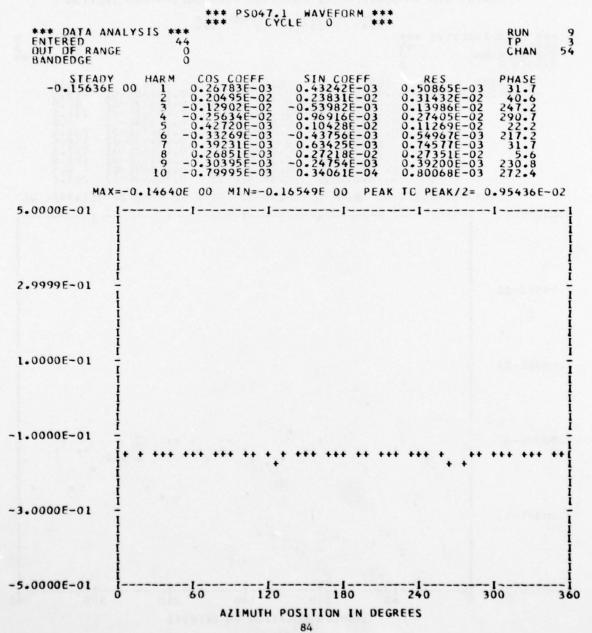


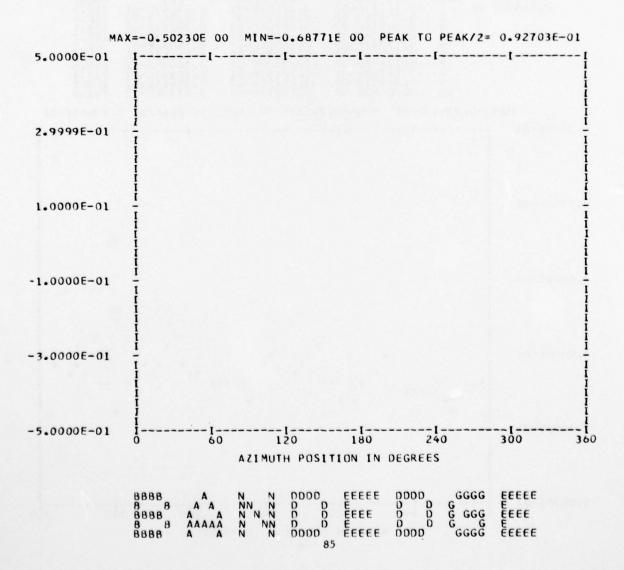


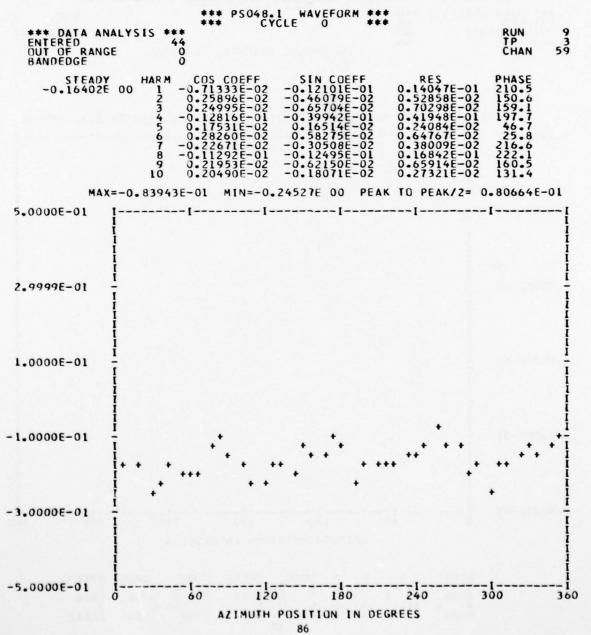
			*** PS0	45.2 WAV	EFORM ***		
6	** DATA ANA NTERED UT OF RANGE ANDEDGE		44 0 0	0.022			RUN TP CHAN 4
	STEADY -0.16153E	00 1 2 3 4 5 6 7 8 9	COS COEF -0.72357E- 0.13611E- 0.13809E- 0.28390E- -0.16273E- 0.23858E- -0.94889E- 0.51115E- 0.19706E- -0.15983E-	02 -0.11 02 0.70 01 -0.14 02 0.57 01 -0.27 02 -0.60 02 -0.86 01 -0.31	COEFF 017E-01 729E-03 395E-01 409E-01 204E-02 455E-02 392E-02 709E-01 907E-01 287E-03	RES 0.13180E-01 0.15339E-02 0.19947E-01 0.57479E-01 0.18474E-01 0.64993E-02 0.12832E-01 0.60151E-01 0.12069E-01 0.16640E-02	PHASE 213.2 62.5 136.1 2.8 261.5 158.4 227.6 121.8 9.3 253.8
		=-0.764		-0.36827E		TO PEAK/2= 0	.14592E 00
5.0	000E-01			-[[[
2.9	999E-01						
1.0	000E-01	<u> </u>					
1.0	000E-01	+ + +	• • • •	***	. *	• • • • • • • • • • • • • • • • • • • •	
3.0	0000E-01 -		٠.	•	•		

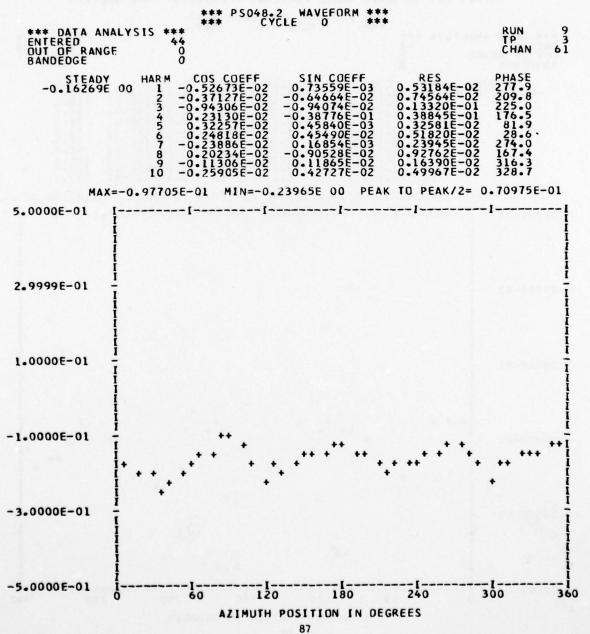
AZIMUTH POSITION IN DEGREES
83

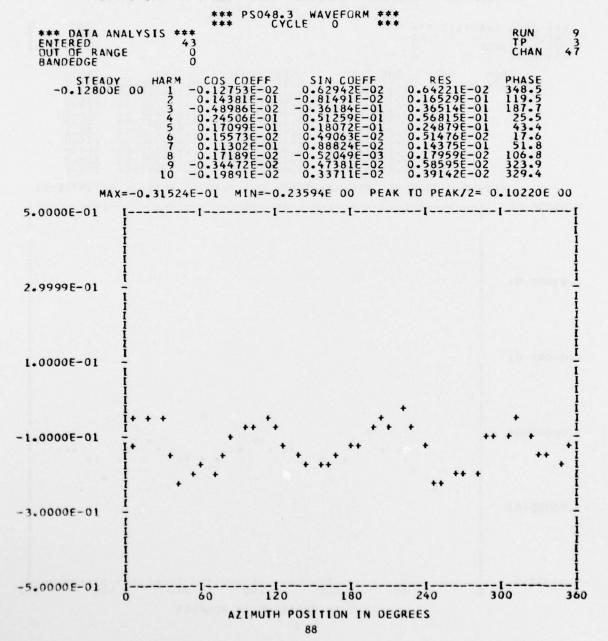
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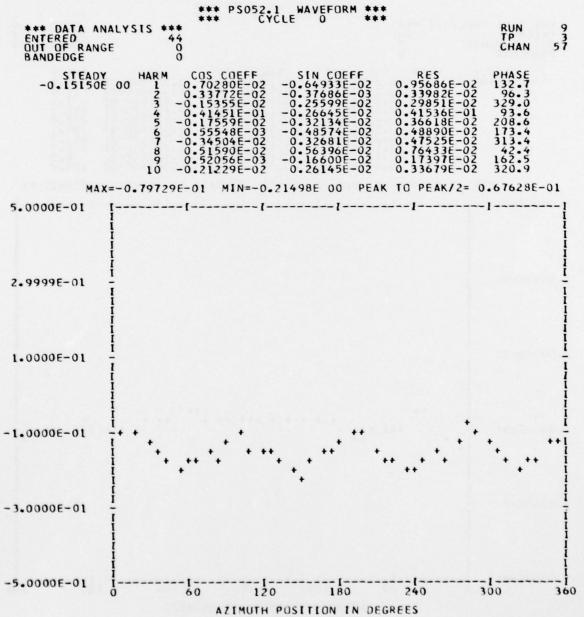


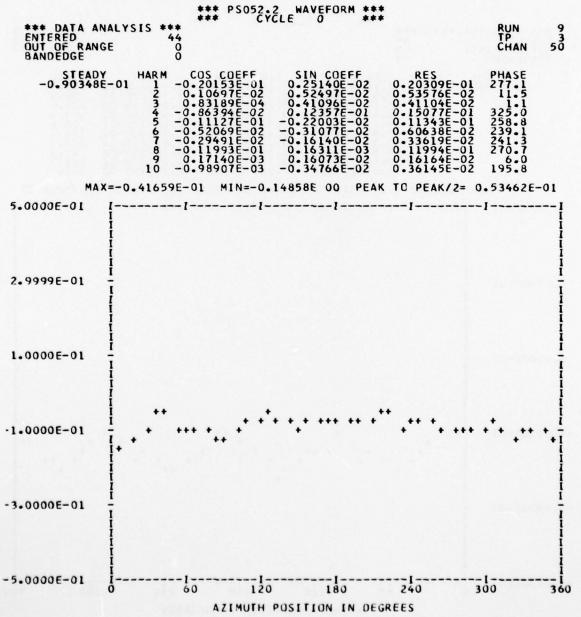


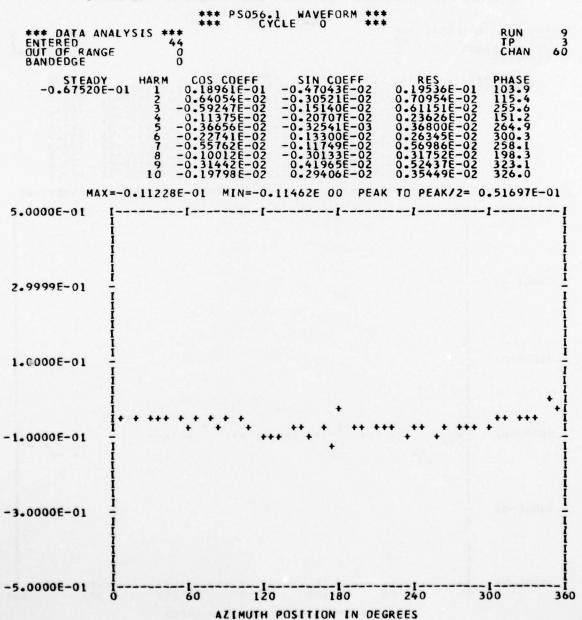


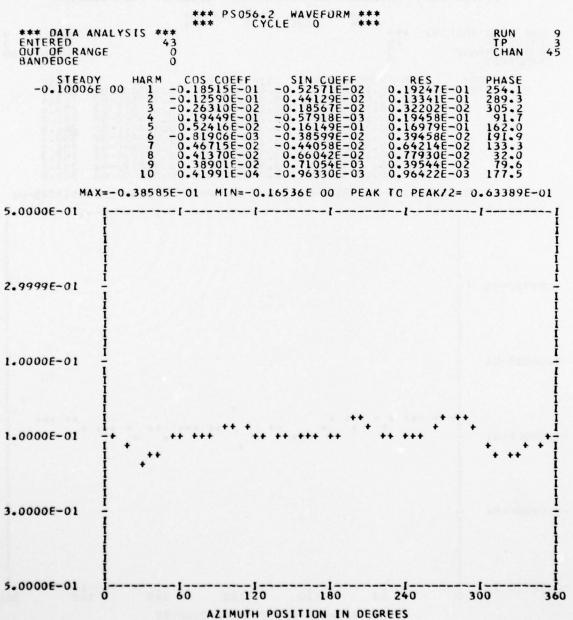




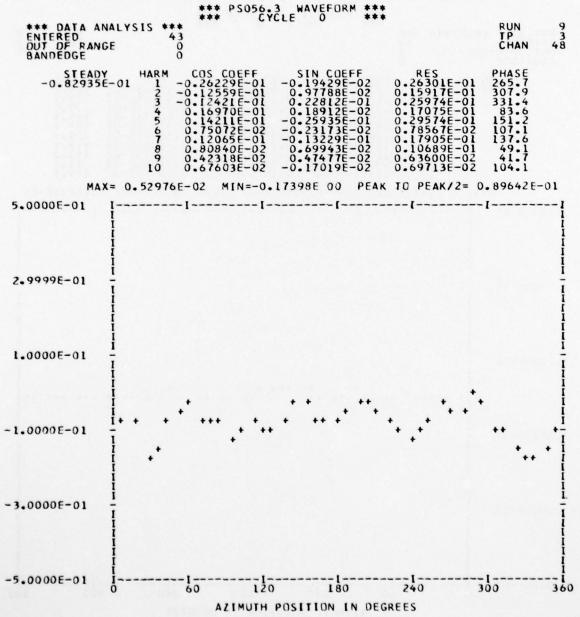


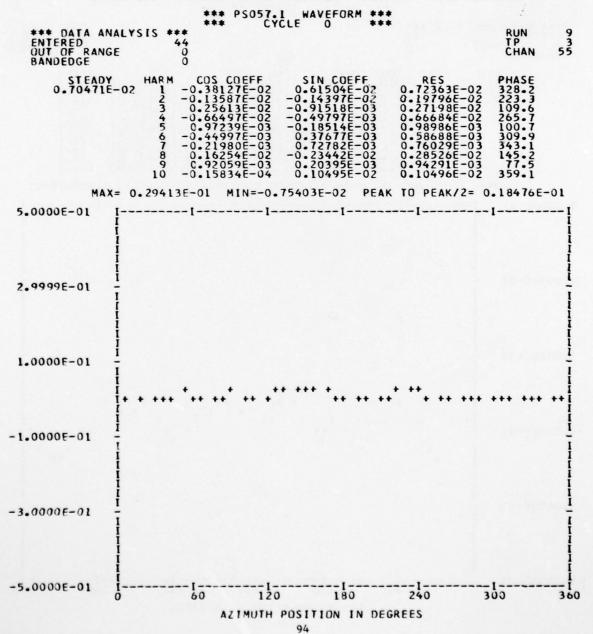


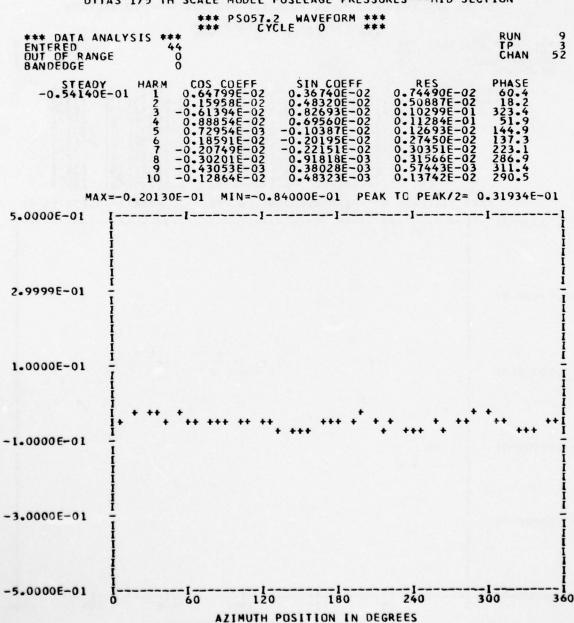




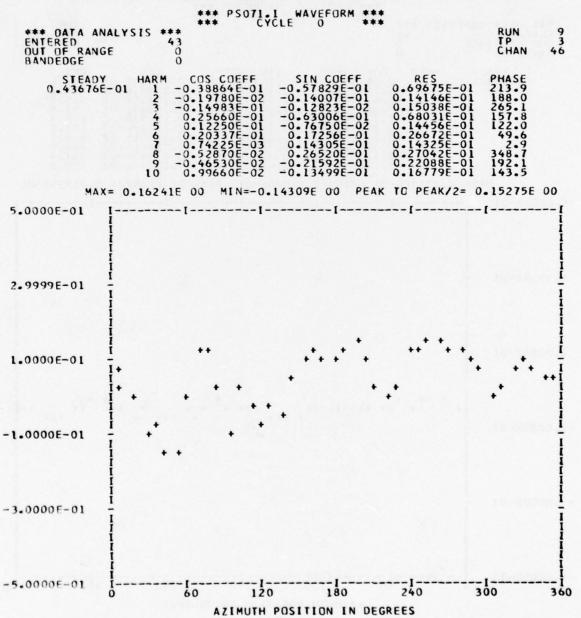
92

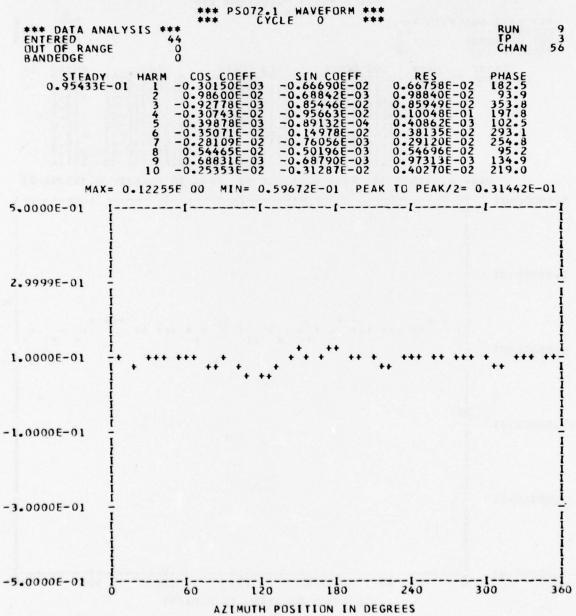


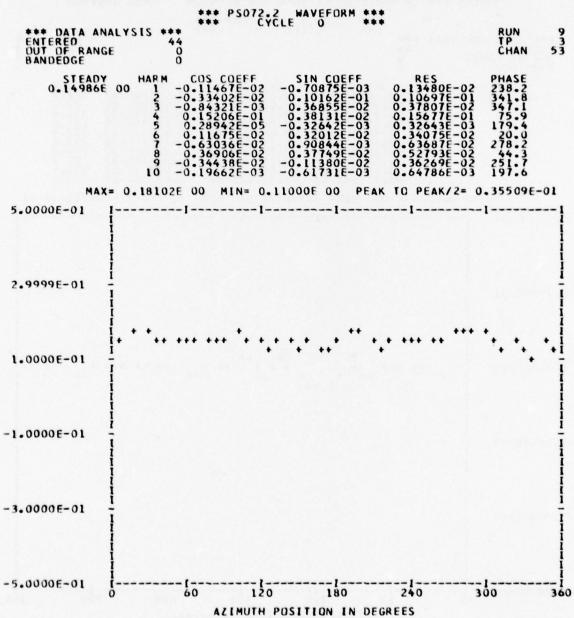


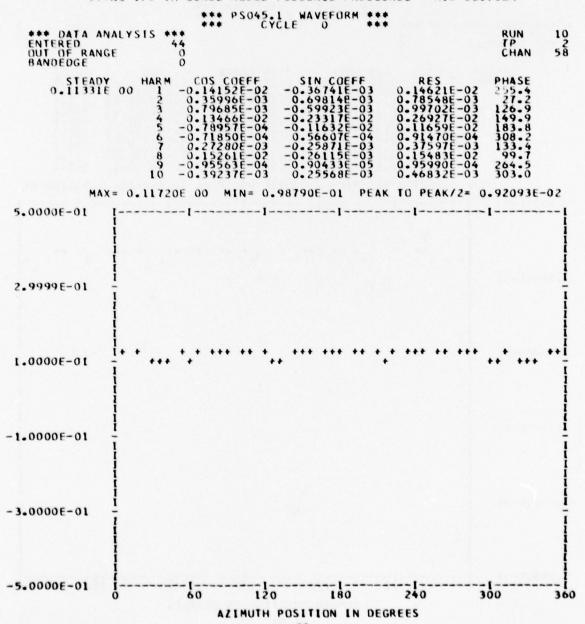


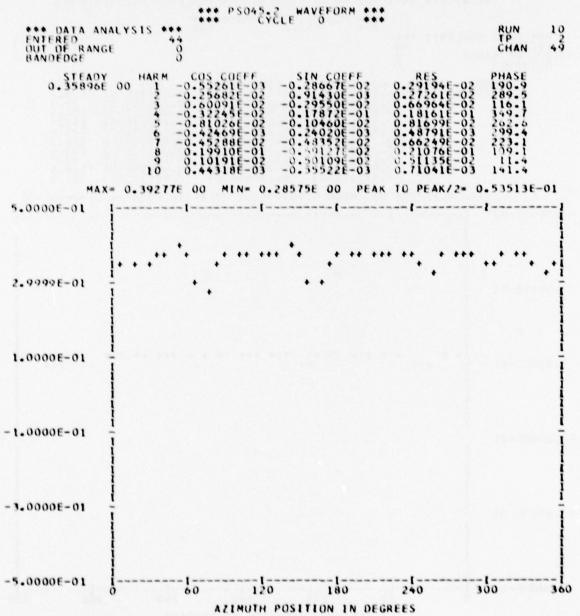
	A061 86	INT	ERACTIO	NAL AE	RODYNAM	DELPHIA ICS OF	THE SI	NGLE RO	DA	AJ02-7	CONFI	1/3 ETC(U)
	2 OF 3 AD61860	0.001	*insat	*Timal	"Finani	Tanal	Timei	BANDED 65			Sinai	Simi	"Timel
nuni	* anal	*inani	Total	Touri	BANGEDAS.	* Dani	- neai		東京町	京川山	EANERDING	* Anni	*janai
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rosper	Figure 1		10.000	10,000			Tinni.	"皇帝社"	* in the last				
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inai	Tonal	inani		Sinui.	Timi	MANGEOGE SANGEOGE	*innat	BANCEDSE	Tinni.	Sonni	* in soi	*innni	a mani
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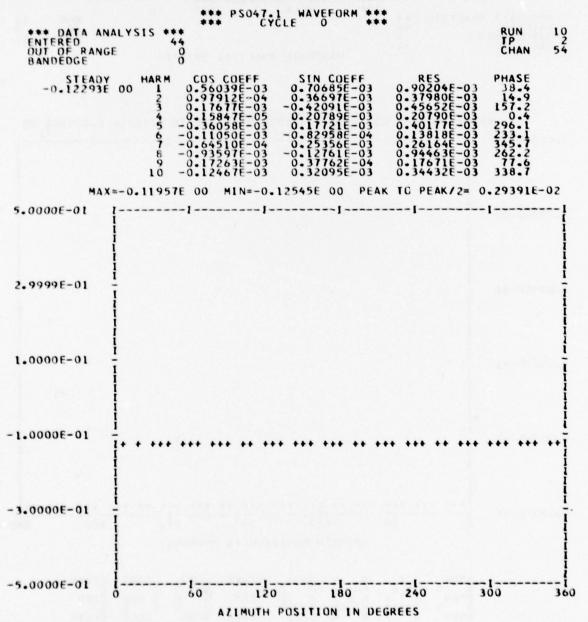


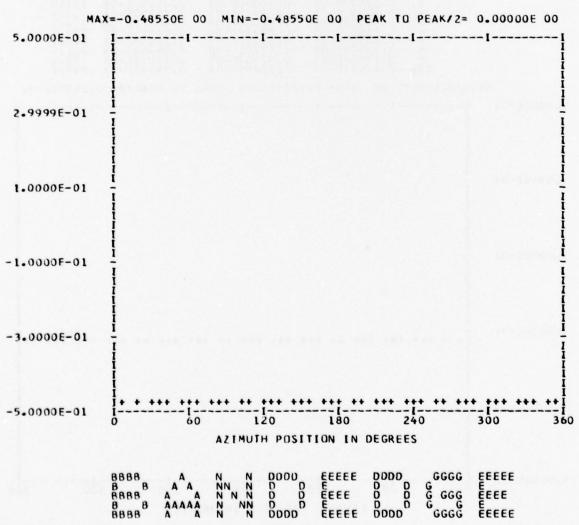




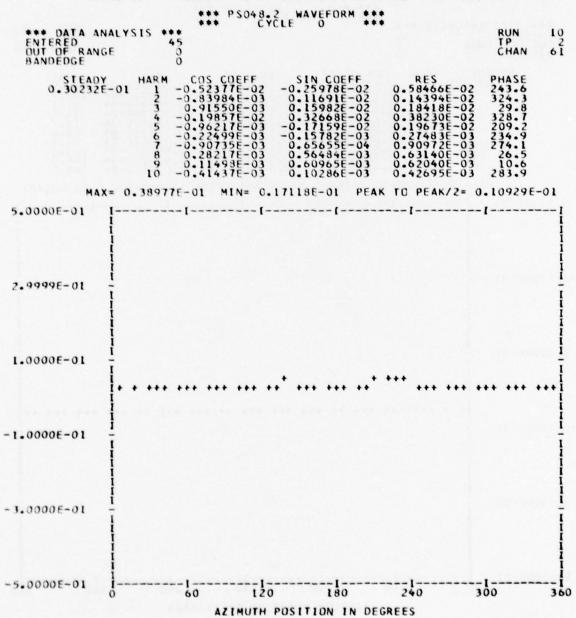






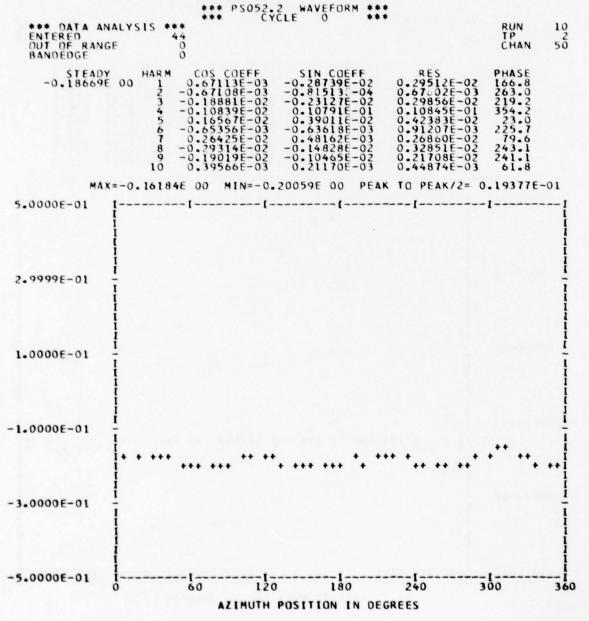


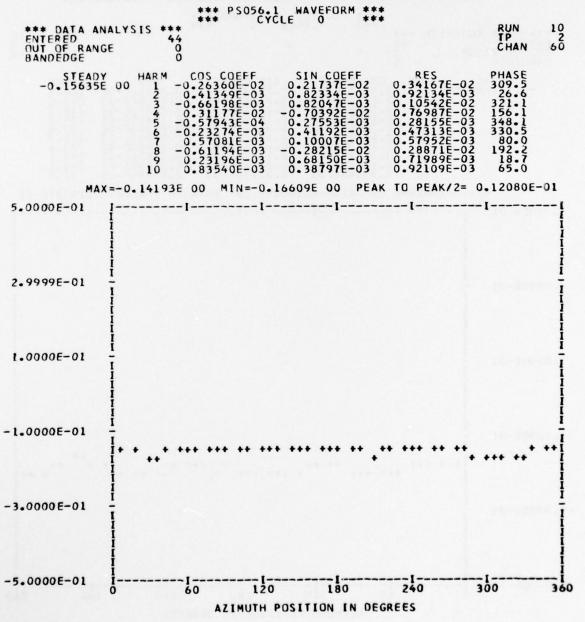
• • • • • • • • • • • • • • • • • • • •		** PS048.	1 WAVEFORM	***		
*** DATA ANAL ENTERED DUT DE RANGE BANDEDGE			CLE 0		RUN TP CHAN	10 2 59
STEADY -0.51613E-0	2 -0.1 3 0.8 4 0.1 5 0.1 6 0.5 7 0.8 9 -0.2	COEFF 2503E-04 4659E-04 44381E-04 2356E-04 0850E-04 1740E-05 66842E-05 60505E-04 8982E-04	SIN COEFF -0.50038E-0 0.1025E-0 0.46579E-0 0.98948E-0 0.21574E-0 0.12377E-0 0.19522E-0 -0.32648E-0 -0.40034E-0 -0.60643E-0	4 0.17891E-04 5 0.96384E-04 5 0.43496E-04 5 0.11062E-04 6 0.51755E-04 4 0.21367E-04 4 0.44682E-04 4 0.449424E-04	304.9 61.1 76.8 78.7 88.6 23.9 223.0 144.0	
	-0.51288E-01			EAK TO PEAK/2=		
5.0000E-01 I-	1		~[I I I I I
1.0000E-01						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
-1.0000E-01	• • •••	••• •• ••	• ••• •••	*** *** **	*** ***	++1
-3.0000E-01 -						
-5.0000E-01 I		120	I 180	I 240	300	i 360
		HTUMISA	POSITION IN	DEGREES		

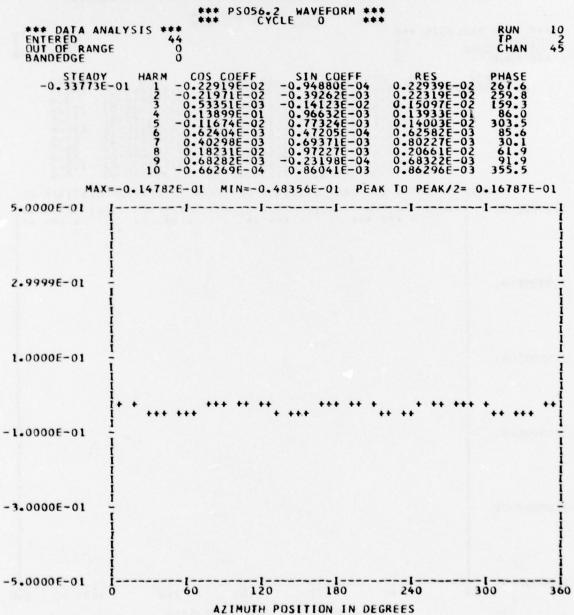


*** PS048.3 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	10 47
STEADY HARM COS COEFF SIN COEFF 0.76892E-02 -0.16562E 00 1 -0.61933E-02 -0.45571E-02 0.76892E-02 2 -0.35844E-03 -0.40368E-03 0.53985E-03 3 -0.17733E-02 0.85364E-03 0.19681E-02 4 0.95524E-02 -0.86671E-03 0.95917E-02 5 0.12117E-02 0.44673E-03 0.12914E-02 6 -0.59302E-04 -0.27312E-03 0.27949E-03 7 0.23591E-02 0.10463E-02 0.27949E-03 7 0.23591E-02 0.10463E-02 0.25807E-02 8 0.40450E-04 0.38972E-02 0.38974E-02 9 0.13080E-02 -0.51380E-04 0.13091E-02 10 0.93379E-04 0.59749E-03 0.60474E-03	PHASE 233.6 221.6 295.7 95.7 192.2 60.5 92.2 8.8	
MAX=-0.14802E 00 MIN=-0.18865E 00 PEAK TO PEAK/2= 0.	.20315E-	01
2.9999E-01		
1.0000E-01 -		
· · · · · · · · · · · · · · · · · · ·	** ***	***!
-3.0000E-01	[
0 60 120 180 240 30 AZIMUTH POSITION IN DEGREES	00	360

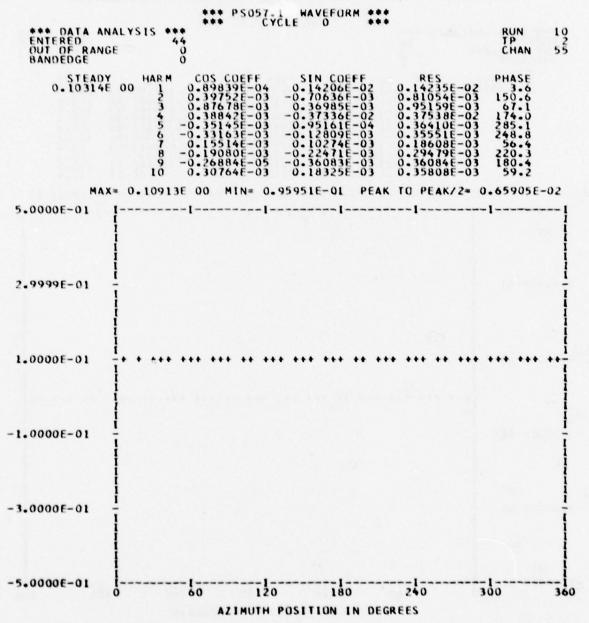
```
*** PS052.1 WAVEFORM ***
CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 0
      0.11650E-01
            MAX= 0.19190E-01
 5.0000E-01
 2.9999E-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                                120 180 240
                           60
                                                                        300
                                AZIMUTH POSITION IN DEGREES
```



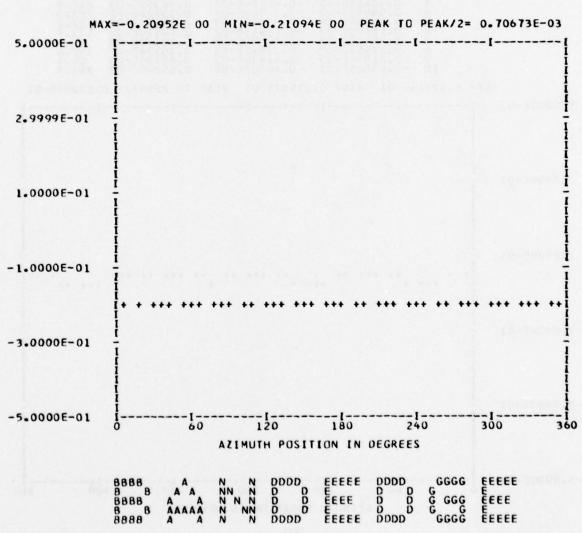


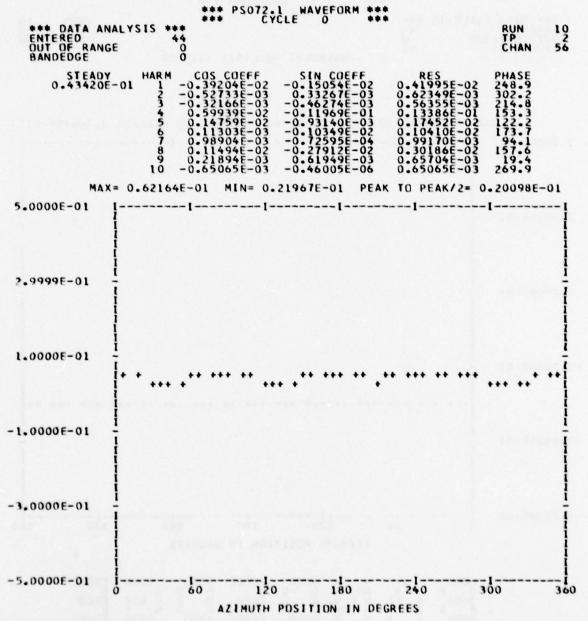


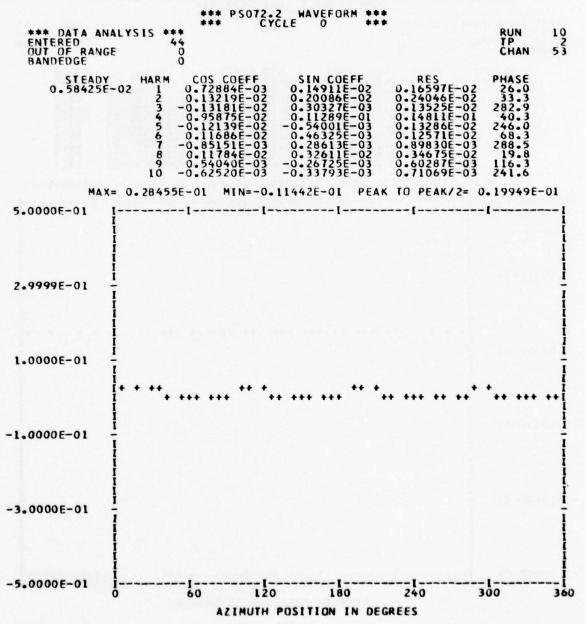
011.		***	P \$056.	3 WAVEFO	RM ***			
*** DATA ANA ENTERED OUT OF RANGE BANDEDGE	4	6	P SO56 CŶ	Çre	***		RUN TP CHAN	10 2 48
STEADY 0.48698E	23 45 67 89 10	COS C -0.6994 0.1467 -0.6117 0.1037 0.1126 0.1161 0.5148 0.8763 0.2100 0.5075	5E-05 7E-04 8E-03 1E-01 2E-02 1E-02 4E-03 0E-03 7E-03 0E-05	S1N C0 -0.41378 0.17881 0.67809 0.85206 -0.10378 0.58110 0.11293 0.19796 -0.45759	E-02 E-05 E-02 E-03 E-03 E-03 E-03	RES 0.41384E-0 0.17881E-0 0.61182E-0 0.13422E-0 0.15315E-0 0.12984E-0 0.21649E-0 0.50350E-0 0.29535E-0	2 70.4 1 50.5 2 132.6 2 63.4 2 24.5 2 23.8 3 155.3	
MAX	= 0.5059			47163E 00		TO PEAK/2=	0.171826-	-01
2.9999E-01	•	•••••	[-			!	• •••	**
1.00006-01								-
-1.0000E-01	1							1
-3.0000E-01	-							
-5.0000E-01	ļ	<u> </u>	120 120	POSITION	IN DEG	1 240 REES	300	360

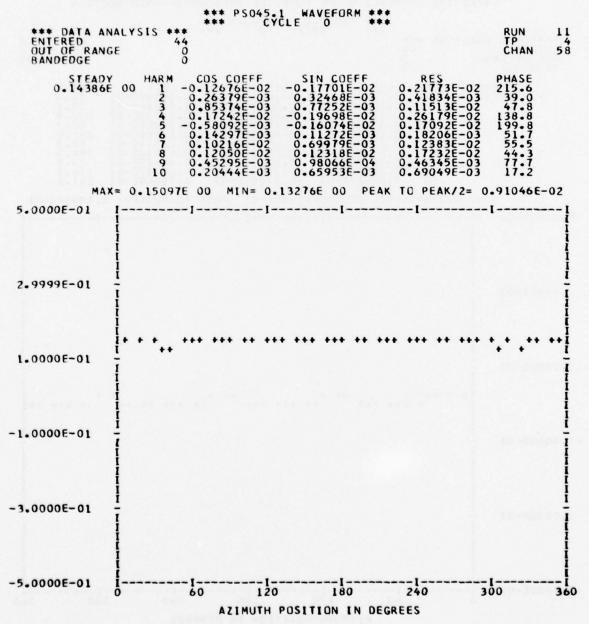


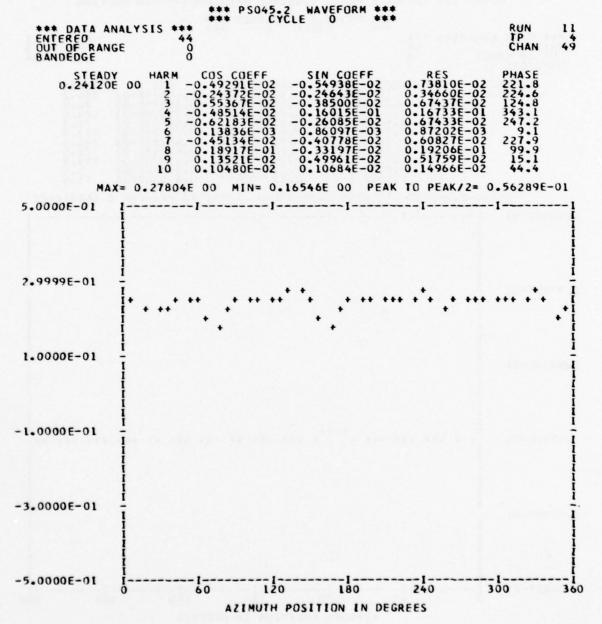
```
*** PS057.2 WAVEFORM ***
CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED
OUT OF RANGE 0
BANDEDGE 0
      0.24469E-02
 5.0000E-01
 2.9999F-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                                   120 180 240
                                                                          300
                                 AZIMUTH POSITION IN DEGREES
```











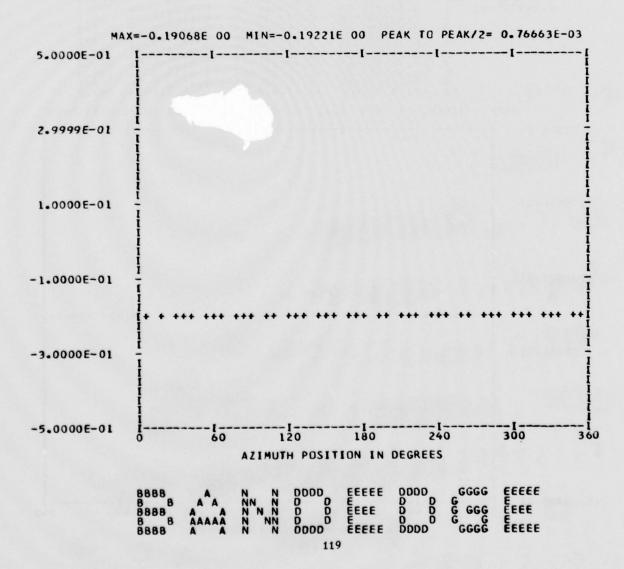
		***	PS047.		FORM ***			
*** DATA ANALY ENTERED OUT OF RANGE BANDEDGE							RUN TP CHAN	11 54
-0.90440E-01	HARM 12345678910	-0.190 0.536 -0.625 0.864 -0.715 -0.444 0.572 -0.609 0.285 0.663	52E-03 15E-04 06E-03 61E-03 36E-03 05E-03 14E-04 21E-03	0.19 0.13 -0.77 0.19 0.49 -0.53 0.10 0.29 0.22	COEFF 034E-02 315E-03 722E-03 778E-04 568E-04 569E-03 913E-03 703E-03	RES 0.19129E- 0.55279E- 0.77538E- 0.88629E- 0.71734E- 0.44757E- 0.58247E- 0.61875E- 0.29840E- 0.69954E-	03 184.6 03 77.1 03 273.9 03 263.1 03 79.5 03 259.8 03 5.4 03 71.4	
MAX=-0 5.0000E-01 1						TO PEAK/2		-02
2.9999E-01							la la sass	
1.00006-01								
-1.0000E-01 -	• •••	•••		• •••	••• •• •		•• ••• •••	**
-3.0000E-01								
-5.0000E-01		1	120		180	240	300	360

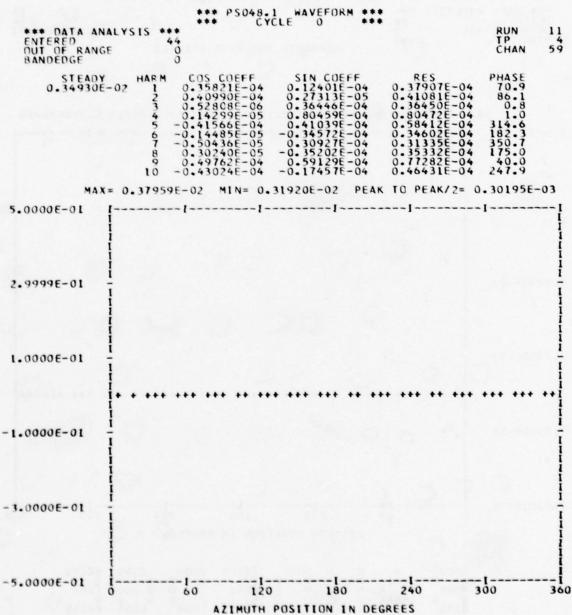
AZIMUTH POSITION IN DEGREES

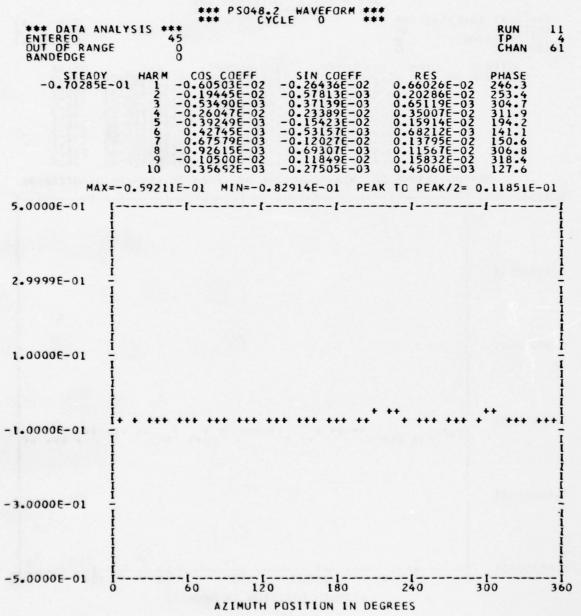
*** PS047.2 WAVEFORM ***

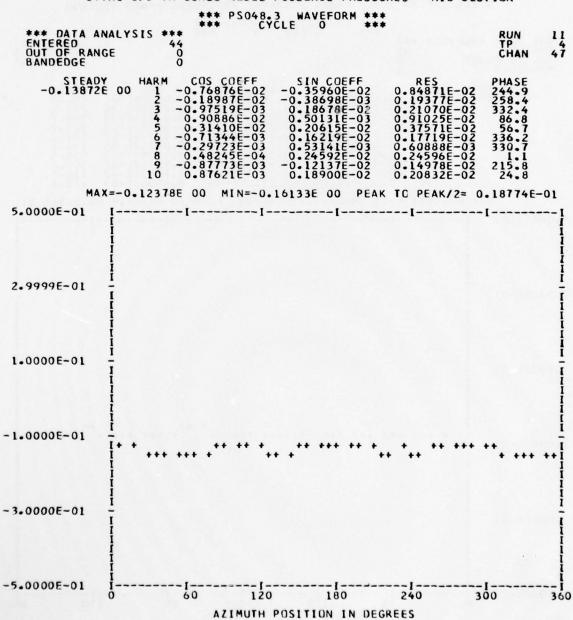
*** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0 BANDEDGE 43

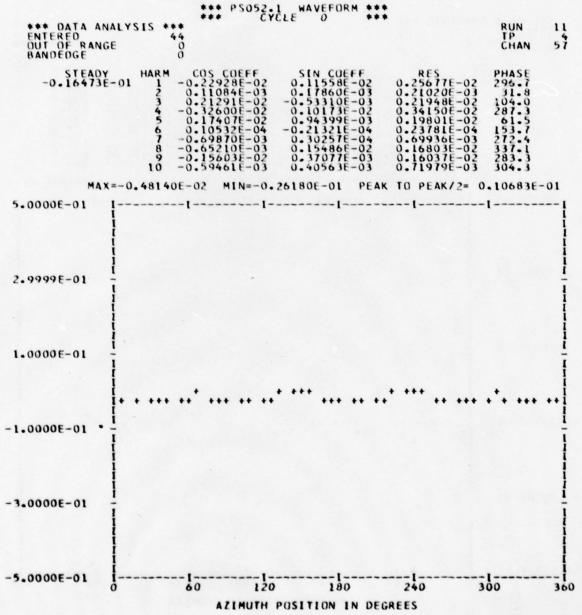
HARMONIC ANALYSIS SKIPPED

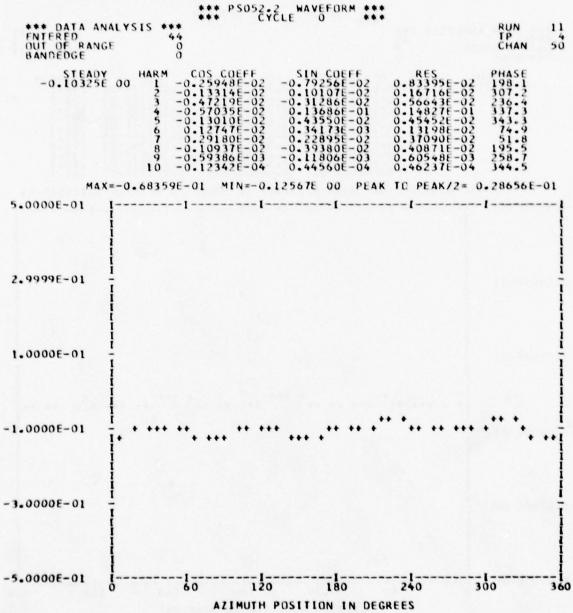


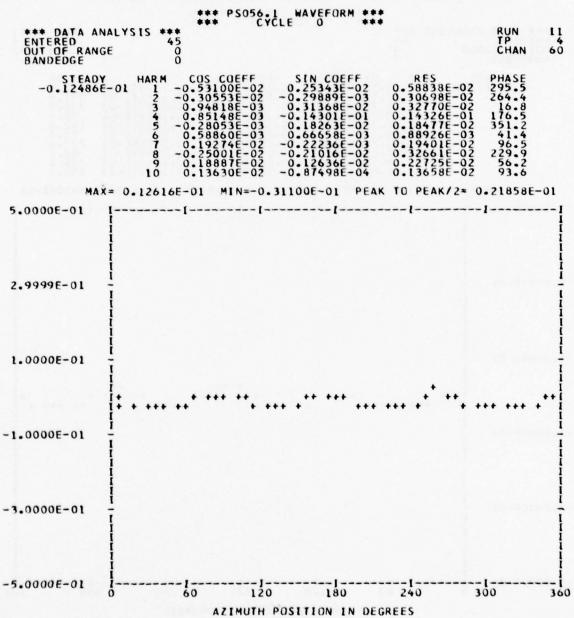


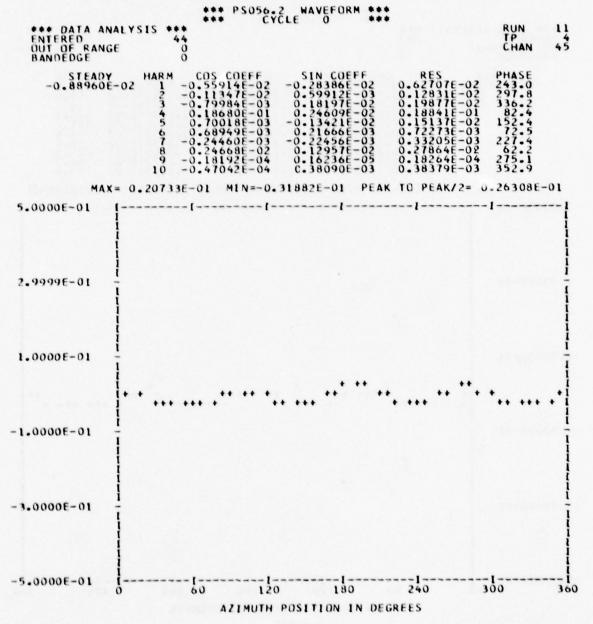






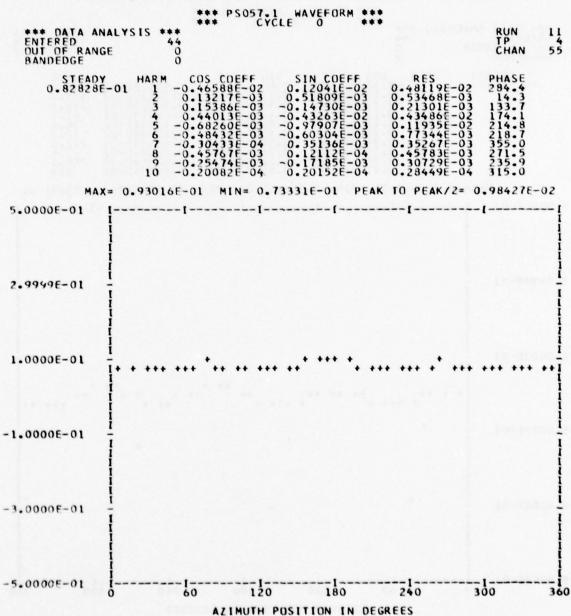


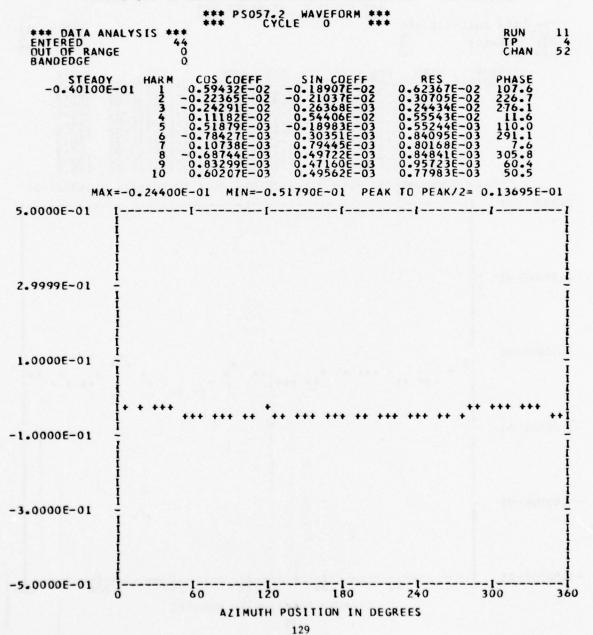


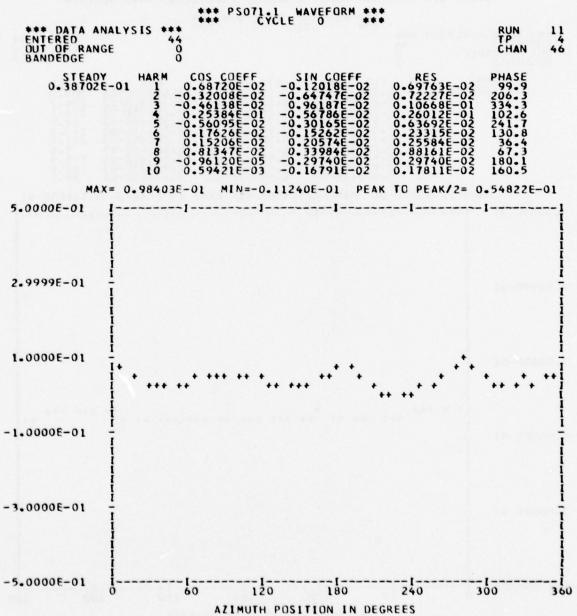


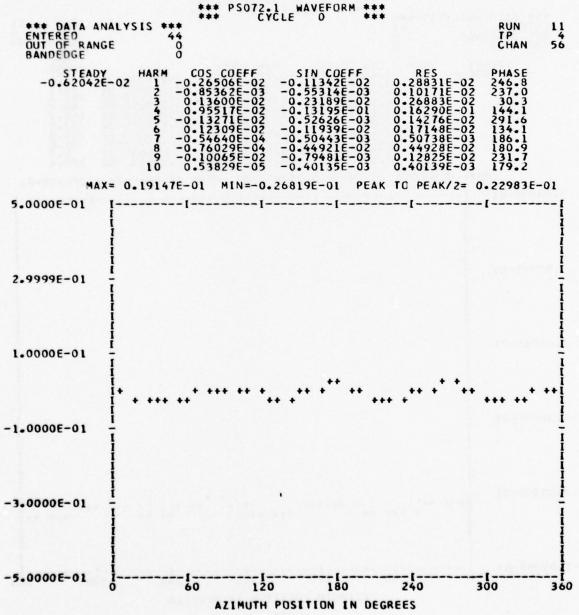
	*** PS056.3 WAVEFORM *** *** CYCLE 0 ***	
*** DATA ANAL ENTERED OUT OF RANGE BANDEDGE	O, OCC.	RUN 11 TP 4 CHAN 48
STEADY -0.68724E-0	HARM COS COEFF SIN COEFF RES 1 -0.38721E-02 -0.48641E-02 0.62172E-02 2 -0.13310E-02 0.17726E-02 0.22167E-02 3 -0.33925E-02 0.48833E-03 0.34275E-02 4 0.13412E-01 0.12113E-01 0.18073E-01 5 0.11114E-02 0.60894E-04 0.11131E-02 6 0.17484E-02 0.53742E-03 0.18292E-02 7 0.87994E-04 -0.62695E-03 0.63309E-03 8 0.15999E-03 0.26837E-02 0.26884E-02 9 -0.36644E-03 -0.21038E-03 0.42254E-03 10 0.31435E-05 0.56173E-03 0.56174E-03	PHASE 218.5 323.0 278.1 47.9 86.8 72.9 172.0 240.1 0.3
	0.22794E-01 MIN=-0.27812E-01 PEAK TO PEAK/2= 0.	
2.9999E-01 - I	[[[[
1.0000E-01 - I	· · ···· ·· ···· ·· ·· ··	++ ++ ++
-3.0000E-01		
-5.0000E-01		i 00 360
	AZIMUTH POSITION IN DEGREES	

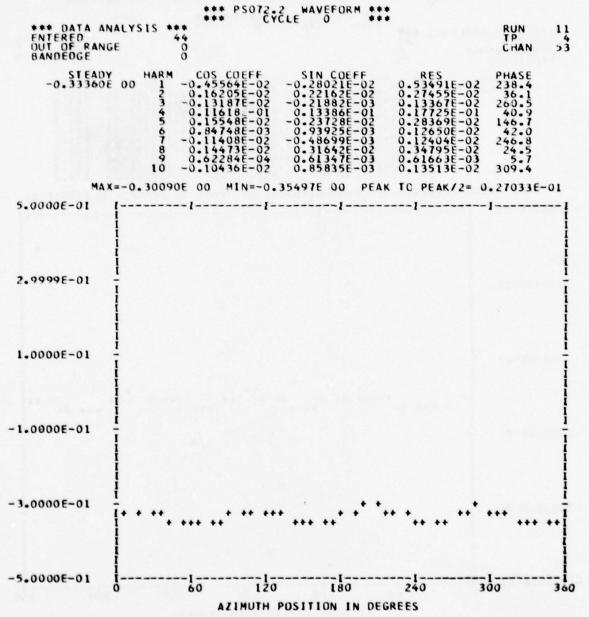
127

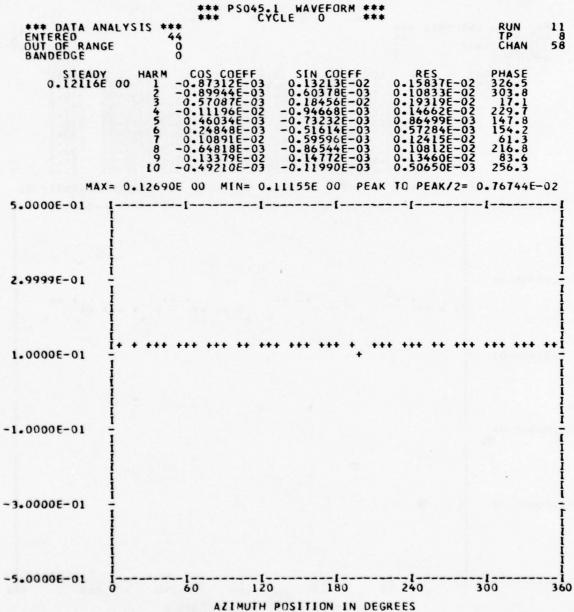


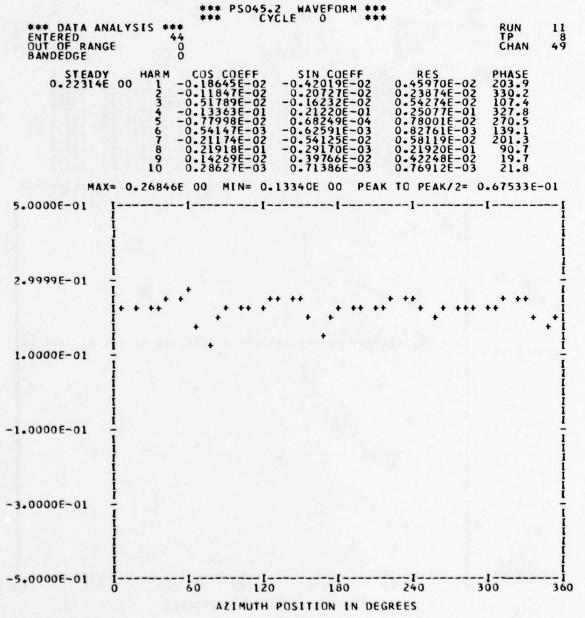












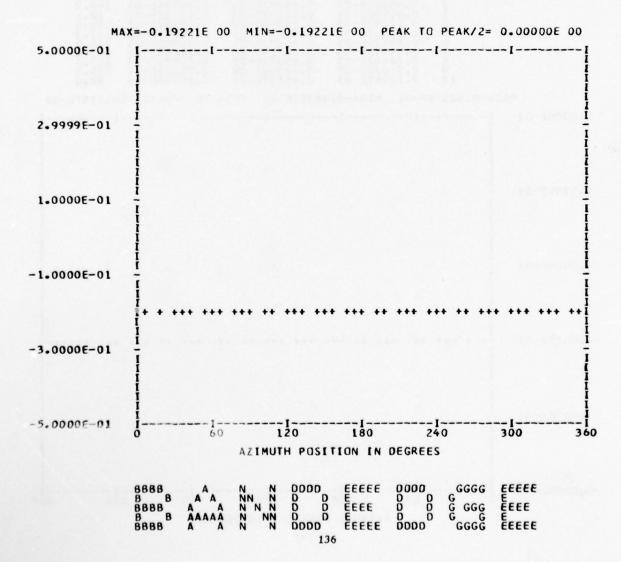
```
*** PS047.1 WAVEFORM ***

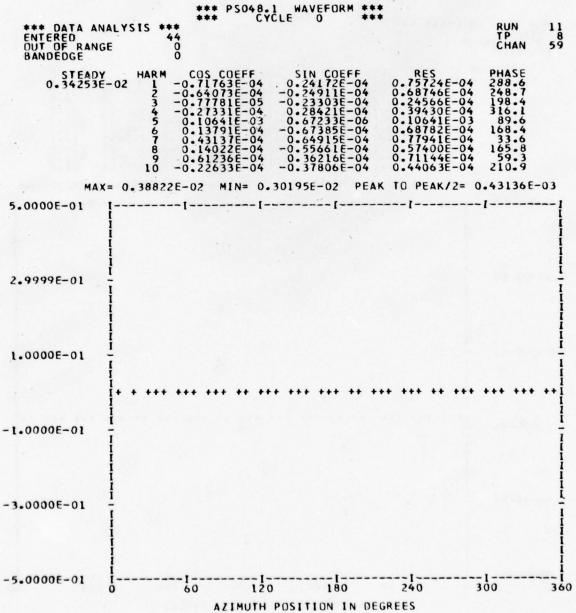
CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED
OUT OF RANGE 0
BANDEDGE 0
                              COS COEFF
-0.29128E-04
-0.35841E-03
0.40506E-04
0.12242E-03
-0.30831E-03
                        HAR M
      -0.95772E-01
               MAX=-0.92324E-01 MIN=-0.98756E-01 PEAK TO PEAK/2= 0.32157E-02
 5.0000E-01
 2.9999E-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                                                   180
                                             120
                                                                                      300
                                 60
                                      AZIMUTH POSITION IN DEGREES
```

*** PSO47.2 WAVEFORM ***

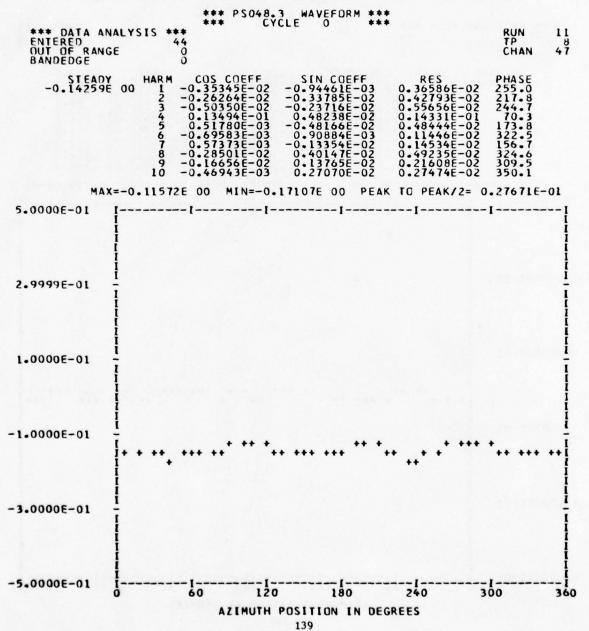
*** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 44

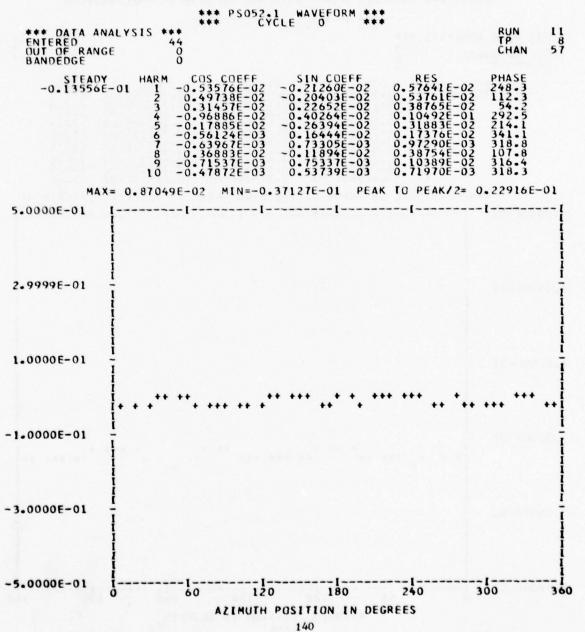
HARMONIC ANALYSIS SKIPPED

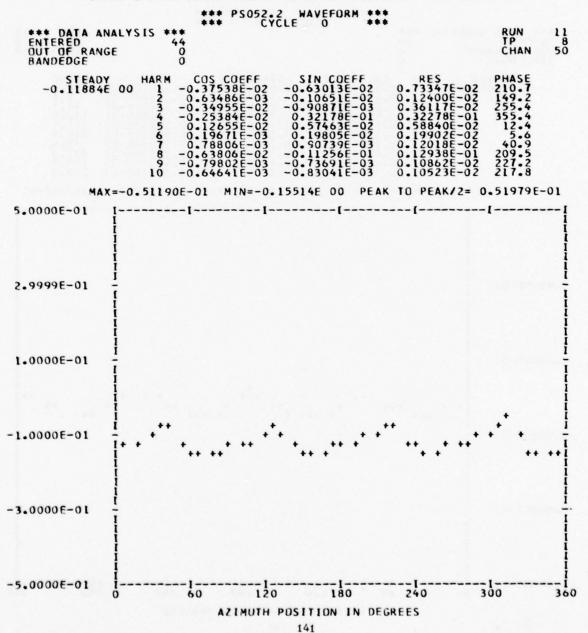


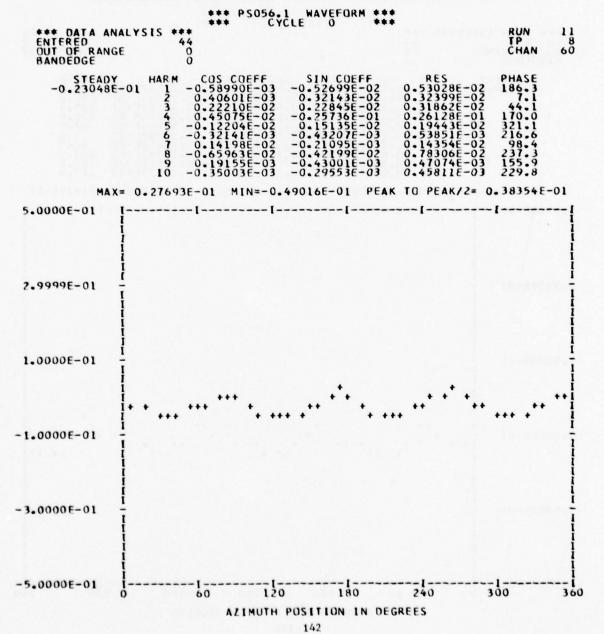


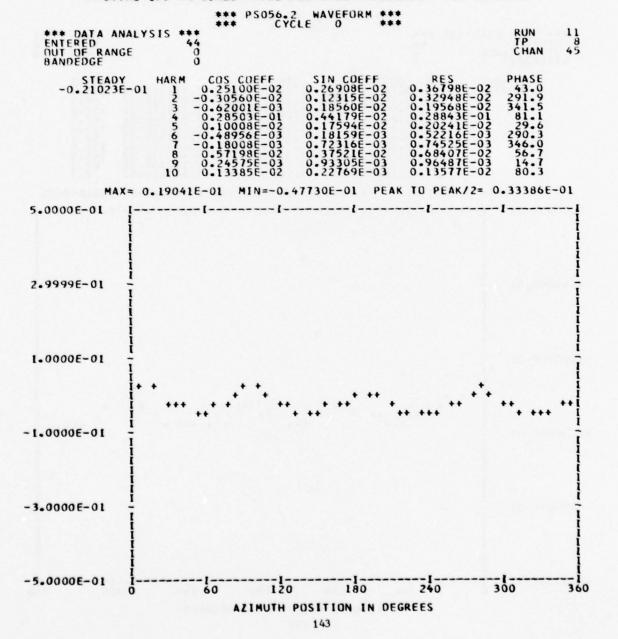
91110	*** PS0	48.2 WAVEFOR	RM ***	
*** DATA ANALY ENTERED OUT OF RANGE BANDEDGE	SIS *** 0 0	CICLE U		RUN 11 TP 8 CHAN 61
-0.73809E-01	HARM COS COEF 1 -0.73622E- 2 -0.50471E- 3 0.31812E- 4 0.31254E- 5 -0.15203E- 6 -0.41371E- 7 0.77506E- 8 -0.25246E- 9 -0.11402E- 10 0.27891E-	03 0.19890 04 0.10819 02 -0.14105 02 -0.42917 03 -0.40628	E-02 0.212096 E-02 0.108306 E-03 0.312866 E-03 0.157978 E-03 0.57984 E-03 0.420386 E-03 0.133066 E-03 0.136528	-02 357.3 -02 0.5 -02 92.5 -02 254.2 -03 225.5 -03 72.1 -03 216.9 -03 301.0 -03 11.7
MAX=-0 5.0000E-01 [.66410E-01 MIN=	-0.82255E-01	PEAK TO PEAK	/2= 0.79226E-02
2.9999E-01				
1.0000E-01				
-1.0000E-01 -		*** *** ***	** *** *** **	··· ··· ··· <u>··</u>
-3.0000E-01 -				
-5.0000E-01	60	120 18	0 240	1
U		JTH POSITION		300

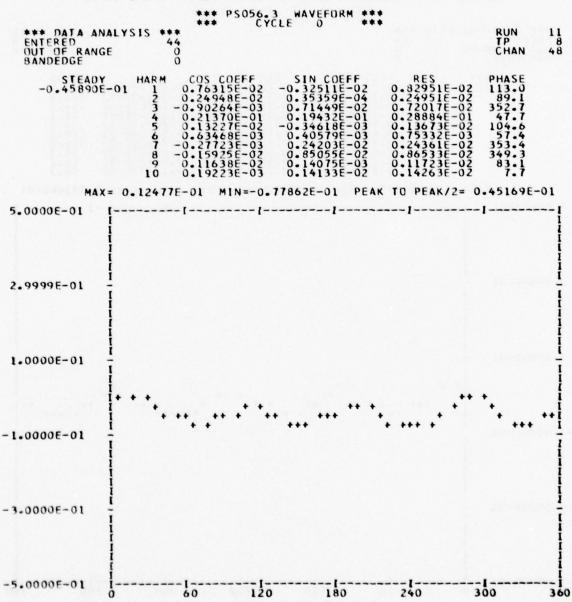




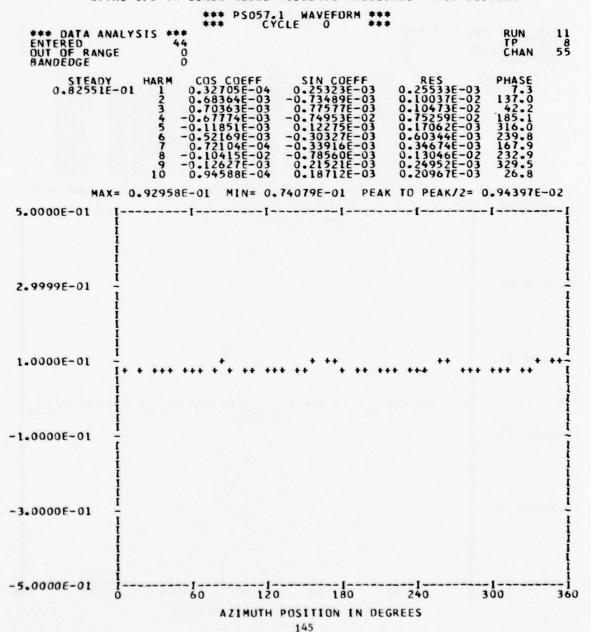


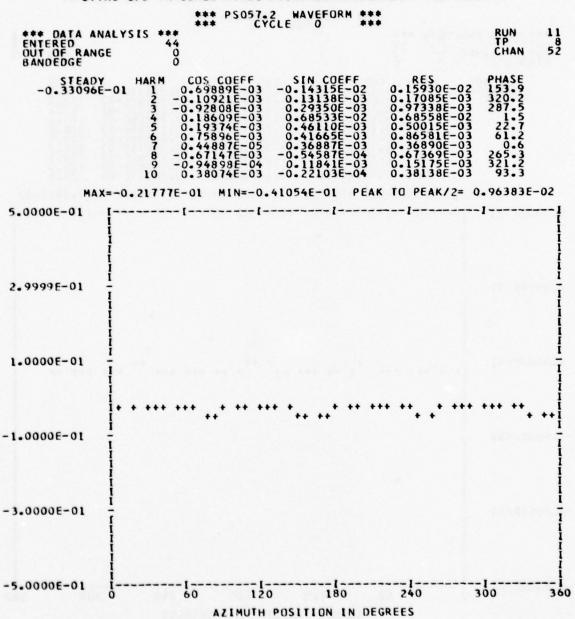




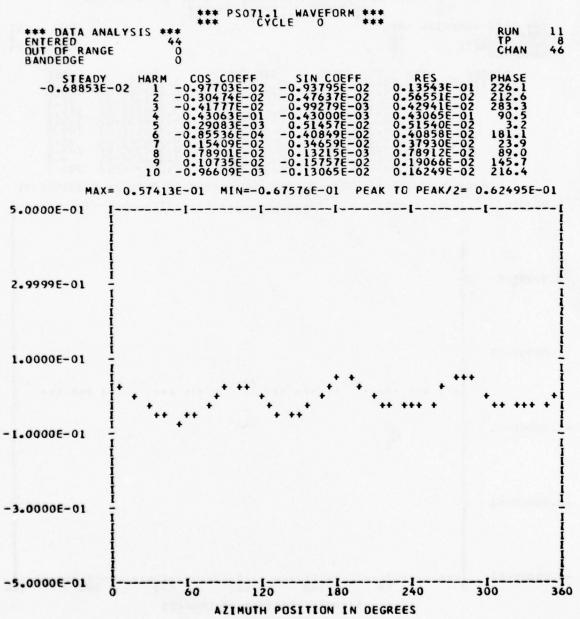


AZIMUTH POSITION IN DEGREES

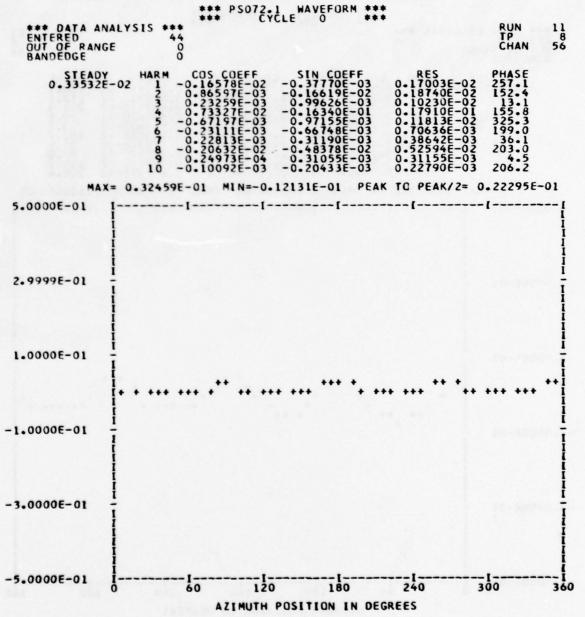


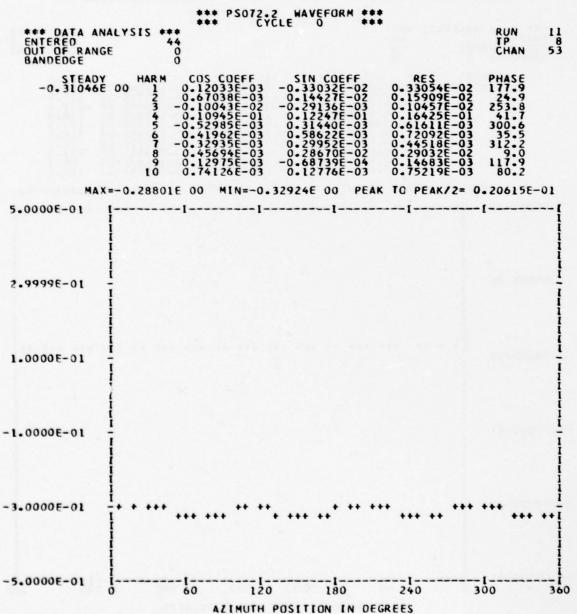


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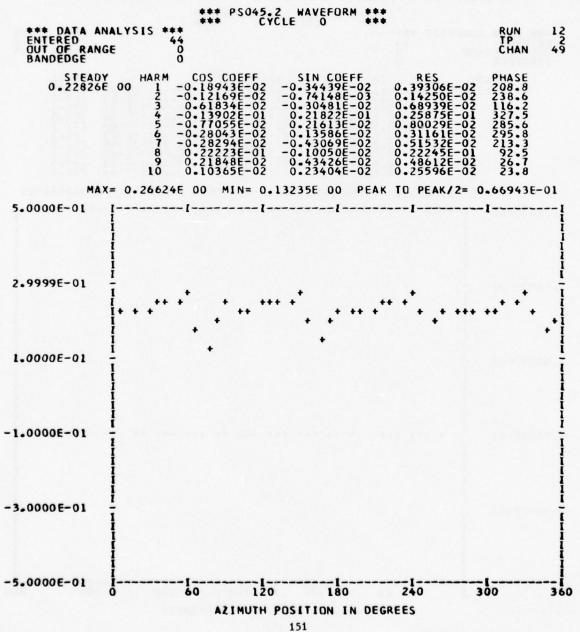
147

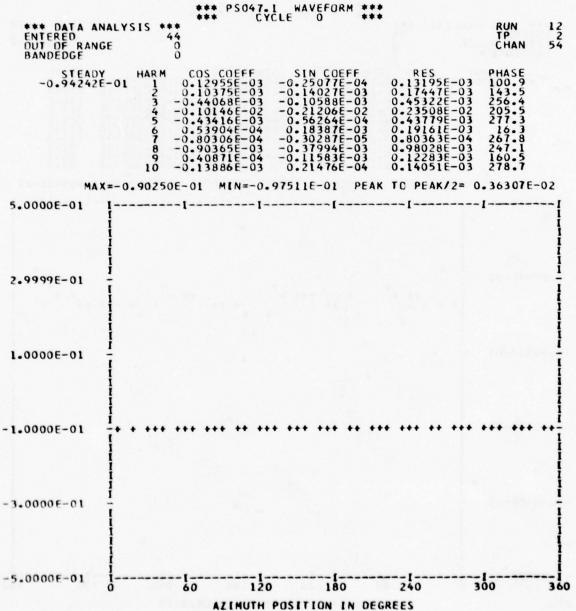




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011	43 175 11		5045-1	WAVEFORM	***	mo seci	10.1	
*** DATA AND ENTERED OUT OF RANGE BANDEDGE		***	ĆÝČL	E 0	•••		RUN TP CHAN	12 58
STEADY 0.12542E	00 1 3 4 5 6 7 8 9	COS CO -0.86951 -0.49259 -0.87421 0.44083 0.66071 0.54303 0.10441 -0.11465 0.41274 -0.47335	E-03 E-03 - E-02 - E-06 - E-03 - E-02 - E-03 -	SIN COEF 0.92797E- 0.70337E- 0.55697E- 0.24414E- 0.20816E- 0.33696E- 0.17732E- 0.19484E- 0.57541E-	03	ES 716E-02 716E-03 365E-02 392E-02 759E-03 971E-02 116E-02 642E-03	PHASE 316.8 324.9 237.4 118.9 179.9 110.9 72.1 212.8 64.7 219.4	
					PEAK TO P			
5.0000E-01	[[([
2.9999E-01								
1.0000E-01		•••		•••	• • • • • • • • • • • • • • • • • • • •			
-1.0000E-01								
-3.0000E-01	1							
-5.0000E-01	0	1	120	180	240		00	360
AZIMUTH POSITION IN DEGREES								

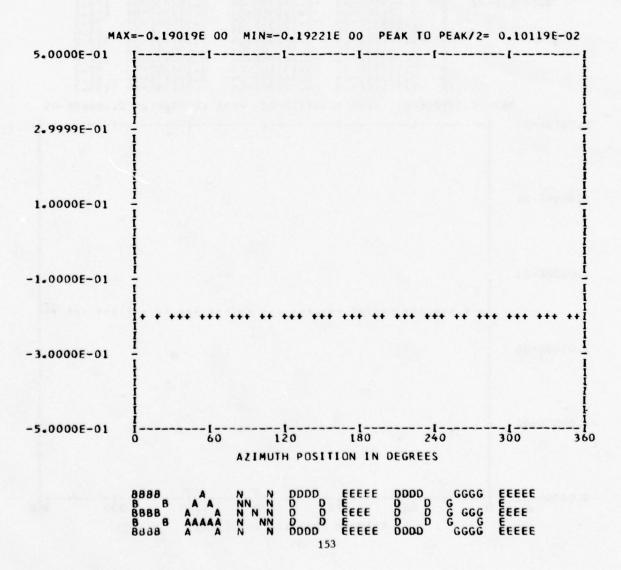


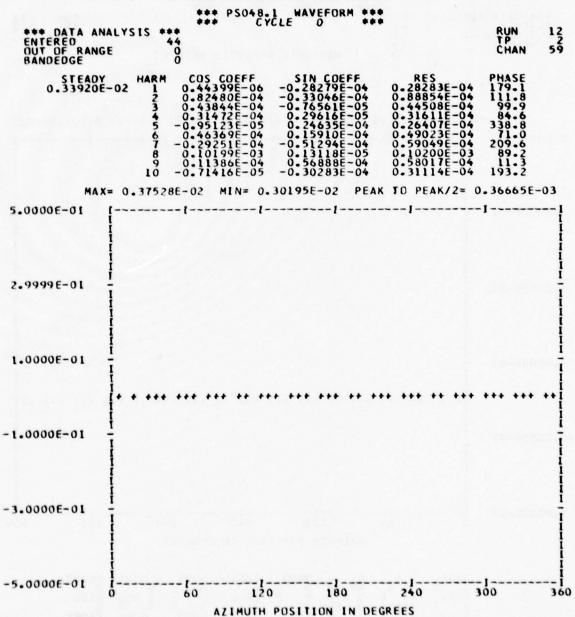


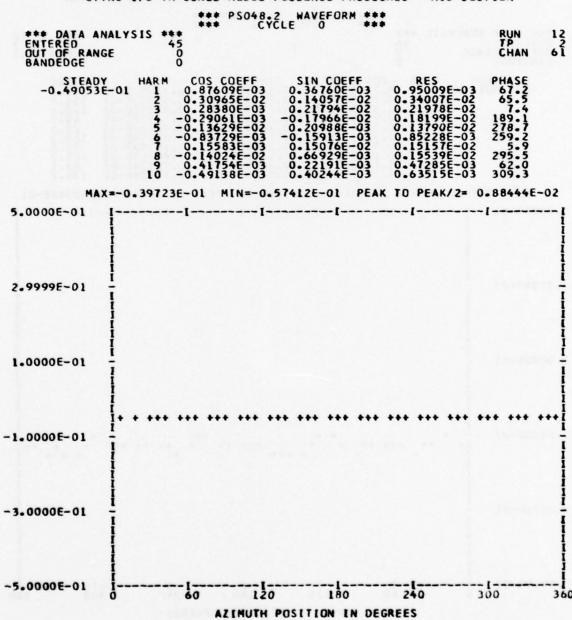
*** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0

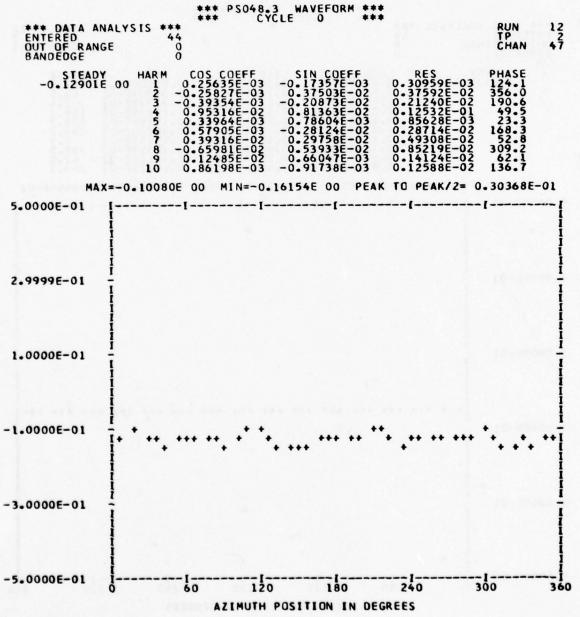
RUN 12 TP 2 CHAN 51

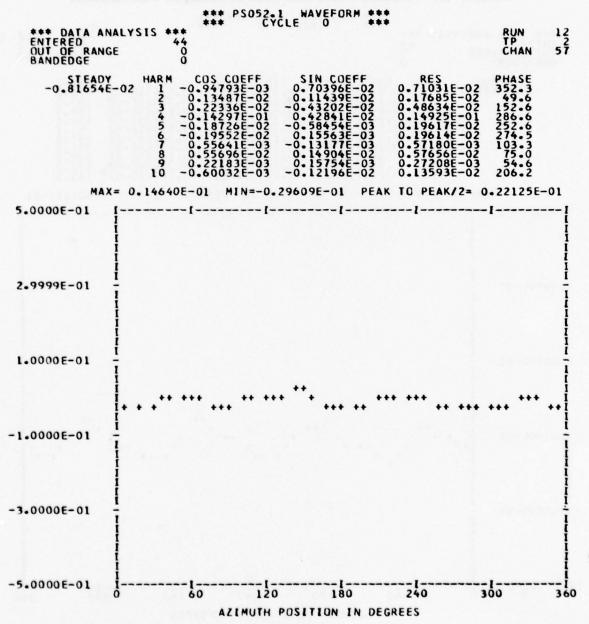
HARMONIC ANALYSIS SKIPPED

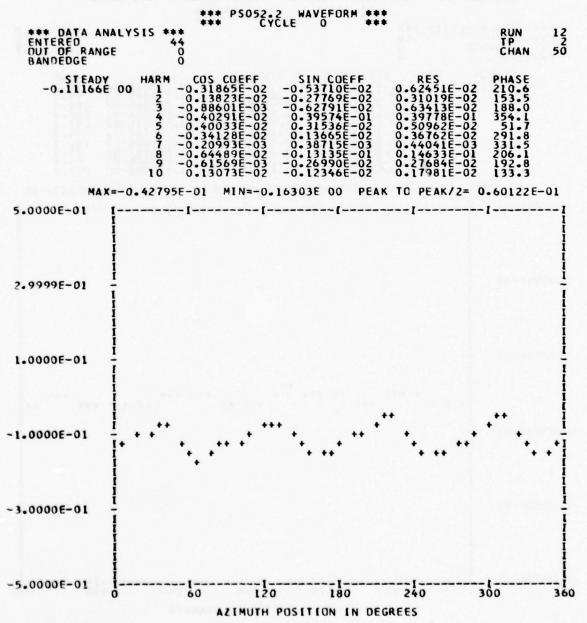




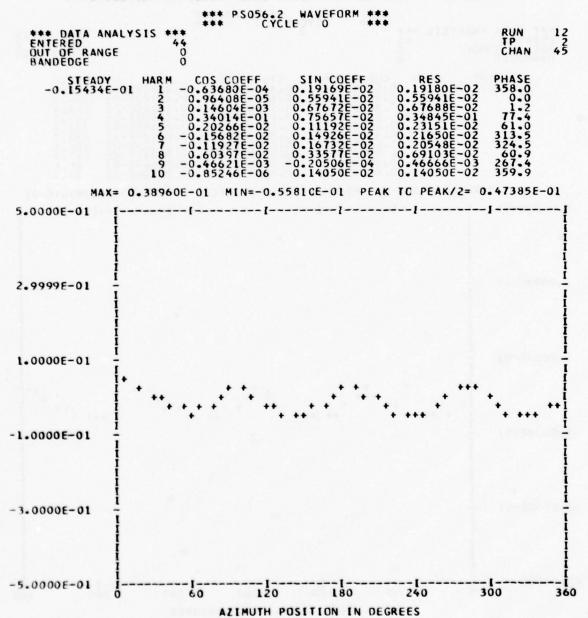


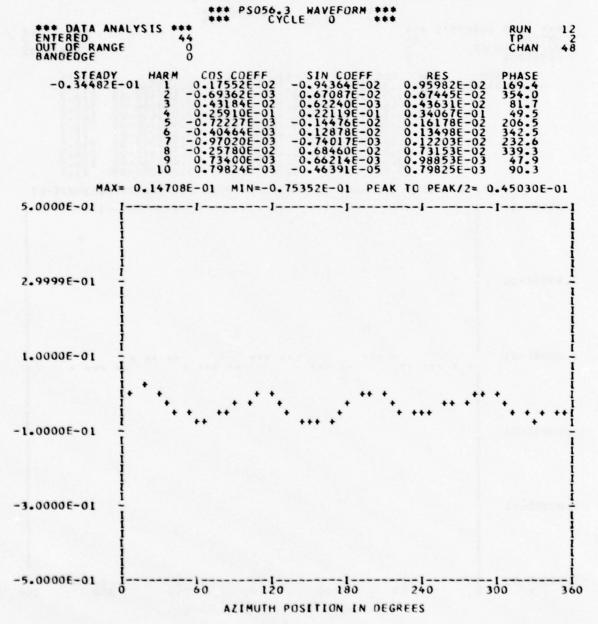






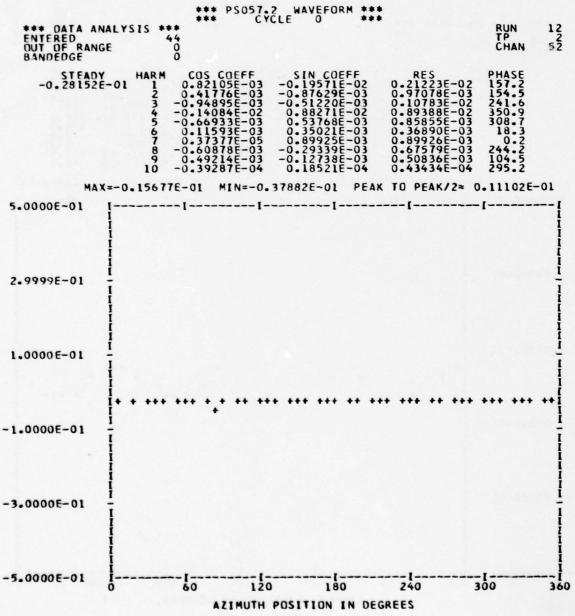
*** PS056.1 WAVEFORM ***							
*** DATA ANAL ENTERED OUT OF RANGE BANDEDGE	0.020	RUN TP CHAN	12 60				
-0.22722E-0	2 0.49225E-03 -0.18043E-02 0.18703E-02 3 0.50349E-03 -0.15414E-02 0.16216E-02 4 -0.39321E-02 -0.31316E-01 0.31562E-01 5 -0.10579E-02 0.18613E-02 0.21409E-02 6 -0.44690E-03 0.86888E-03 0.97707E-03 7 -0.18449E-04 -0.25255E-03 0.25323E-03 8 -0.98875E-02 -0.35250E-03 0.98938E-02 9 0.74666E-03 0.32585E-03 0.81467E-03 10 0.44081E-03 0.73522E-03 0.85724E-03	PHASE 201.4 164.7 161.9 187.1 330.3 332.7 184.1 267.9 66.4 30.9					
MAX= 5.0000E-01 I-	0.26053E-01 MIN=-0.52548E-01 PEAK TO PEAK/2= 0.	39301E-	01				
2.9999E-01 - I							
1.0000E-01			***************************************				
-1.0000E-01							
-3.0000E-01							
-3.00002-01	60 120 180 240 30	0	360				
	AZIMUTH POSITION IN DEGREES						

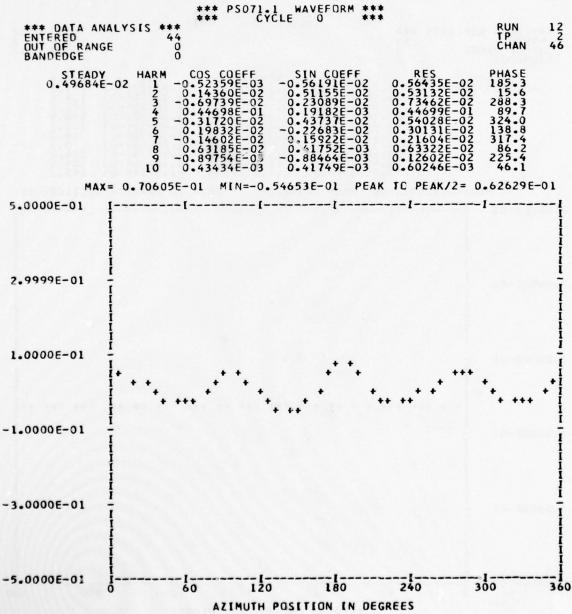


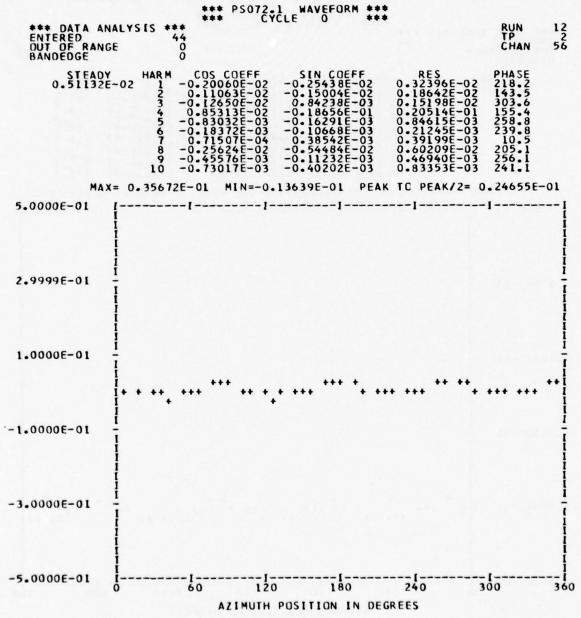


```
*** PS057.1 WAVEFORM ***

CYCLE 0 ***
   *** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 0
      0.85901E-01 HARM
            MAX= 0.10026E 00 MIN= 0.76093E-01
                                                      PEAK TO PEAK/2= 0.12087E-01
 5.0000E-01
 2.9999E-01
 1.0000E-01
-1.0000E-01
-3.0000E-01
-5.0000E-01
                                      120 180
                            60
                                                                          300
                                 AZIMUTH POSITION IN DEGREES
```



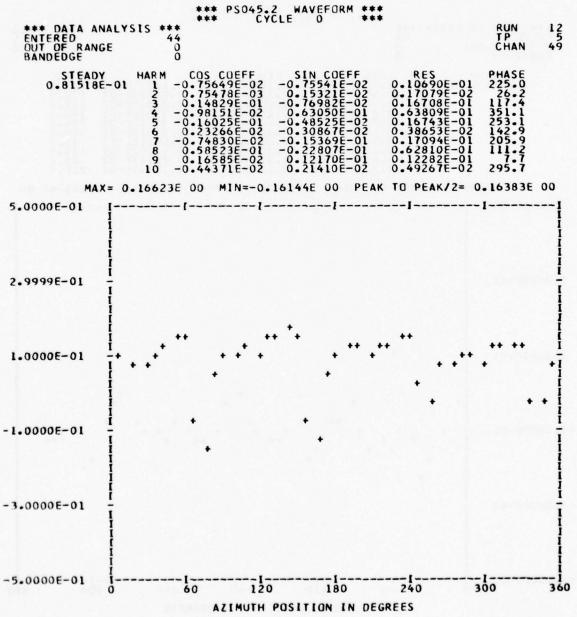


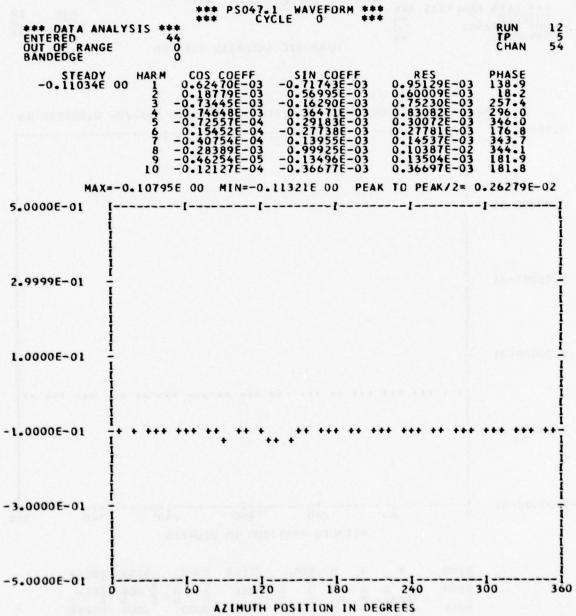


*** DATA AND ENTERED OUT OF RANGE BANDEDGE	44		YCLE O	***	RUN TP CHAN	12 53
-0.30524E	2345	COS CUEFF -0.17069E-02 0.79277E-03 -0.36203E-03 0.11713E-01 0.12519E-03 -0.553902E-03 -0.77693E-04 -0.76406E-04 -0.29997E-03 -0.27114E-03	0.14013E-0 0.14013E-0 0.64413E-0 0.18177E-0 0.23077E-0 0.284499E-0	02 0.34981E-02 03 0.88489E-03 04 0.36469E-03 01 0.18264E-01 03 0.65618E-03 03 0.56884E-03 02 0.23090E-02 04 0.31165E-03	PHASE 209.2 63.6 263.0 39.8 10.9 288.6 209.6 358.1 285.7 221.0	
MAX	=-0.281656	00 MIN=-0	0.32536E 00 I	PEAK TC PEAK/2=	J. 21856E-	-01
5.0000E-01		· I I			-1	!
2.9999E-01						
	1					i
1.0000E-01	!					Ī
-1.0000E-01	· · · · ·	* **	····· ·	· · ··	٠٠.	***
-5.0000E-01	i i i i i		1		-1	360

*** DATA ANA ENTERED OUT OF RANGE	44	*** PS045.	1 WAVEFORM	***	RUN 12 TP 5 CHAN 58
BANDEDGE	0				CHAIN 30
-0.10165E	2 0 3 0 5 -0 6 -0 7 0 8 0	COS COEFF 15259E-01 54396E-04 13270E-02 23399E-01 28531E-02 26545E-02 535533E-01 63584E-02 20713E-02	SIN COEFF -0.10055E-0 -0.28733E-0 -0.20735E-0 -0.28755E-0 -0.10543E-0 0.22685E-0 0.85542E-0 -0.31980E-0 -0.18011E-0	2 0.28738E-02 0.24618E-02 1 0.37073E-01 2 0.30417E-02 2 0.34918E-02 0.54212E-02 1 0.43592E-01 0.71173E-02	178.9 147.3 140.8 249.7 310.5 80.9 188.9 63.2
MAX=	-0.78139E-	02 MIN=-0.	21390E 00 P	EAK TO PEAK/2=	0.10304E 00
5.0000E-01	1		1	1	-11
2.9999E-01					1 1 1 1 1
1.0000E-01	•	•		•	1 1 1 1 1
-1.0000E-01	• • • •	• • • • •	* * * *		+ + + + +
-3.0000E-01					1 1 1 1 1
-5.0000E-01	}			240	300 360
		HTUMISA	POSITION IN	DEGREES	

167

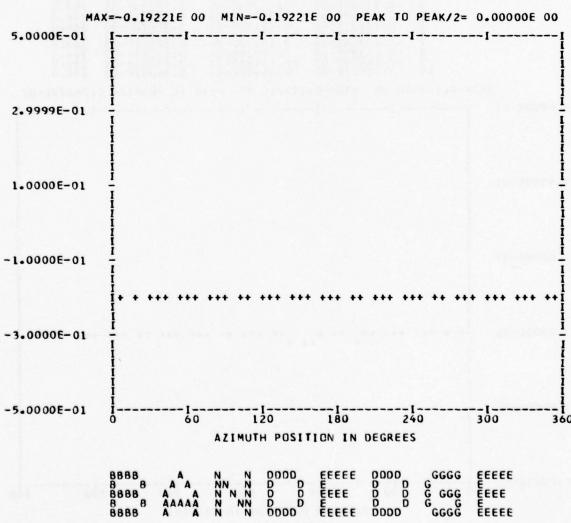


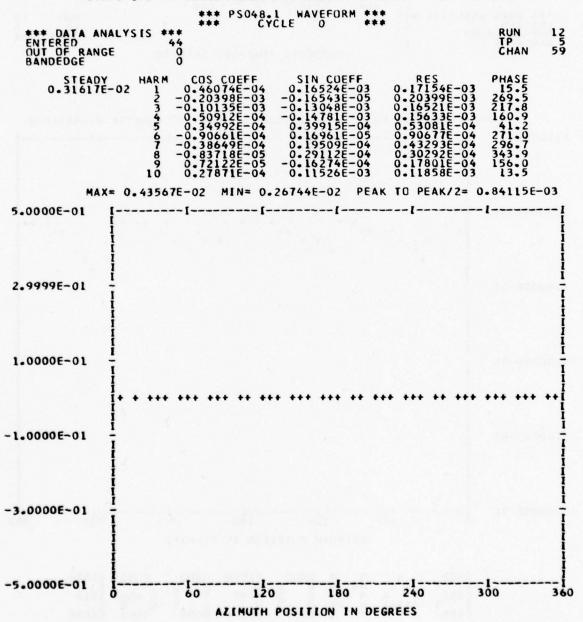


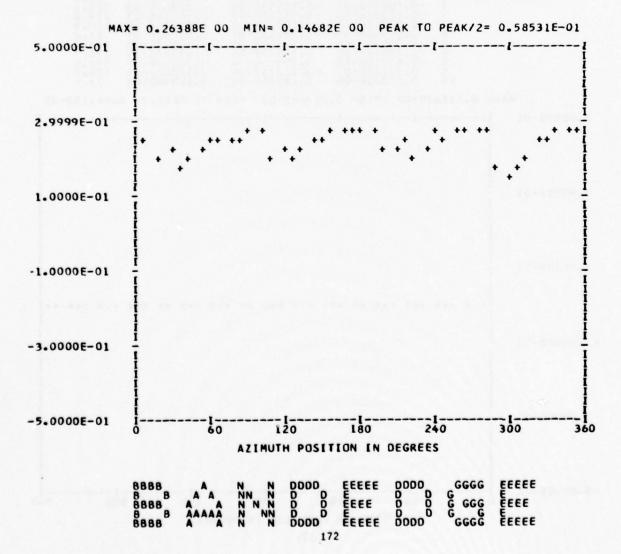
*** PSO47.2 WAVEFORM ***

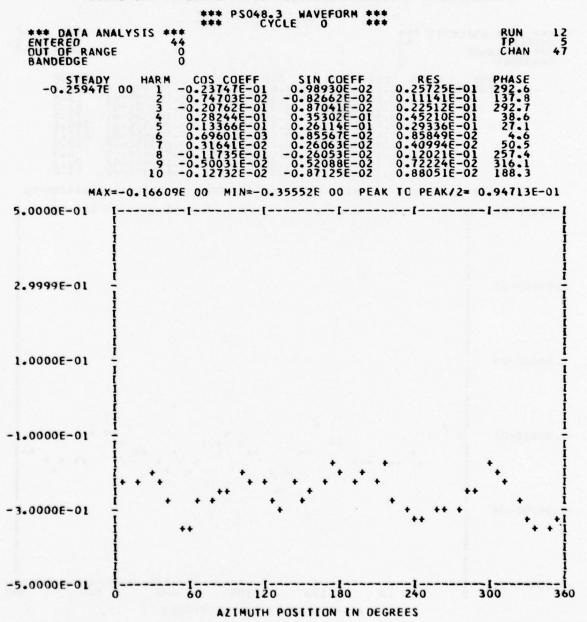
*** DATA ANALYSIS ***
ENTERED 44
OUT OF RANGE 0
BANDEDGE 44

HARMONIC ANALYSIS SKIPPED

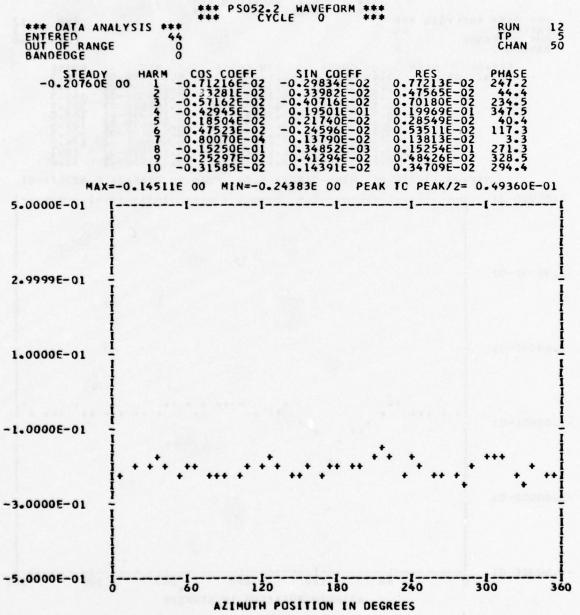


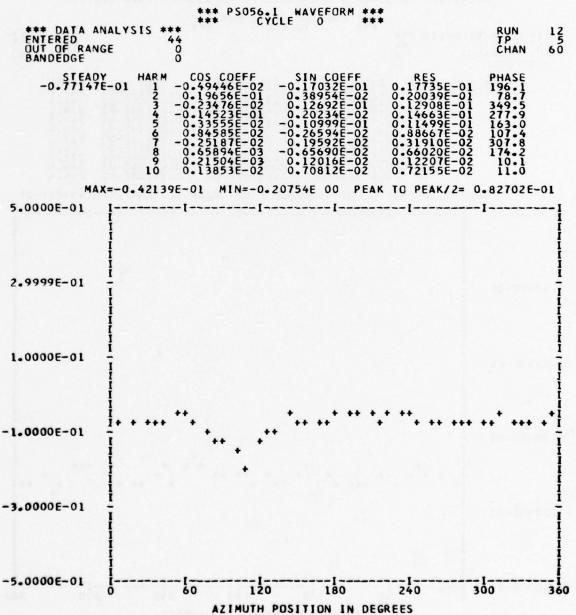


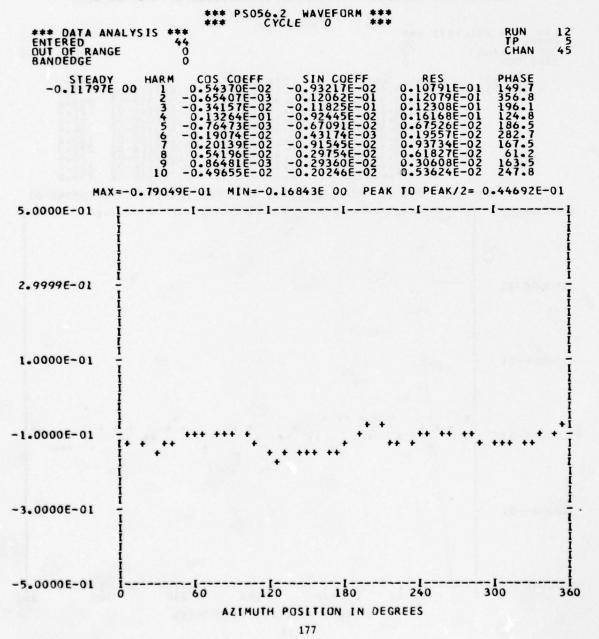


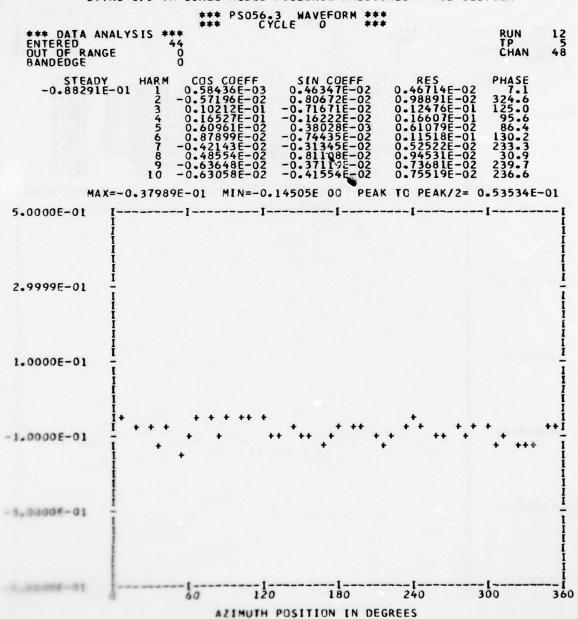


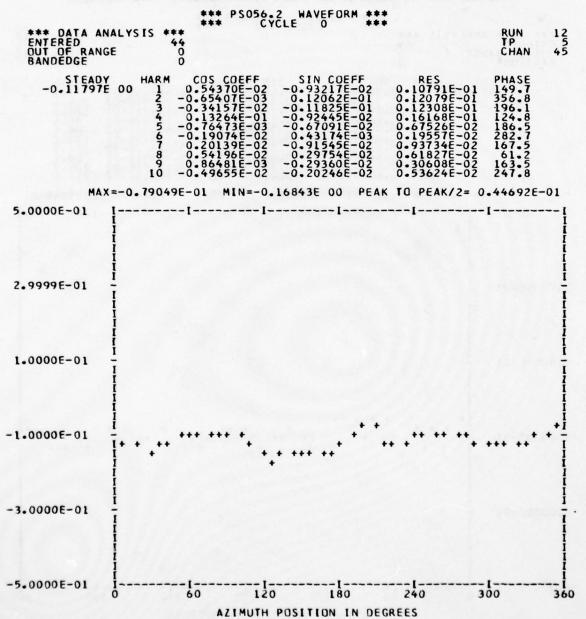
*** PS052.1 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	12 5 57
STEADY HARM COS COEFF -0.65695E-02 0.75570E-02 0.84087E-04 0.12974E-02 0.13002E-02 0.51923E-02 0.28119E-02 0.59048E-02 0.39363E-01 0.10126E-01 0.40645E-01 0.40645E-01 0.40645E-01 0.40645E-02 0.32294E-02 0.78668E-02 0.91566E-02 0.32294E-02 0.78668E-02 0.85038E-02 0.9128FE-02 0.92475E-02 0.93161E-02 0.022340E-02 0.58142E-02 0.62287E-02	PHASE 150.3 3.7 61.5 75.5 280.1 152.3 22.3 6.9 90.3 21.0	
MAX=-0.80256E-01 MIN=-0.24261E 00 PEAK TO PEAK/2= 0	. 811806-	1
2.9999E-01		INCHEST PERSONAL
-1.0000E-01	· ···•	**
	J	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
AZIMUTH POSITION IN DEGREES		

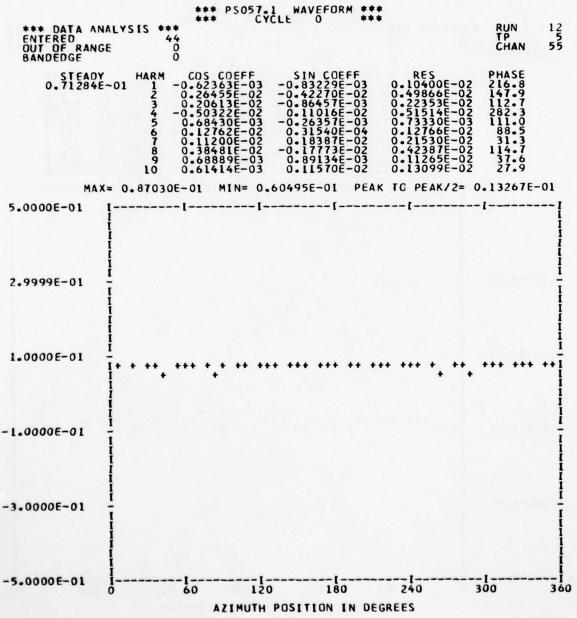


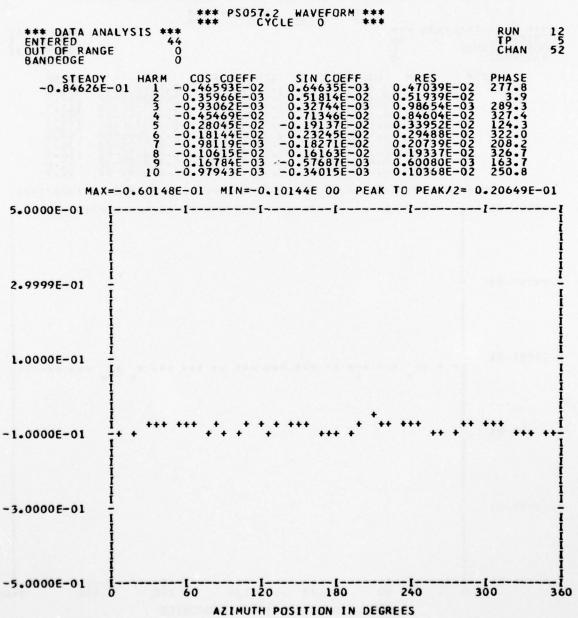


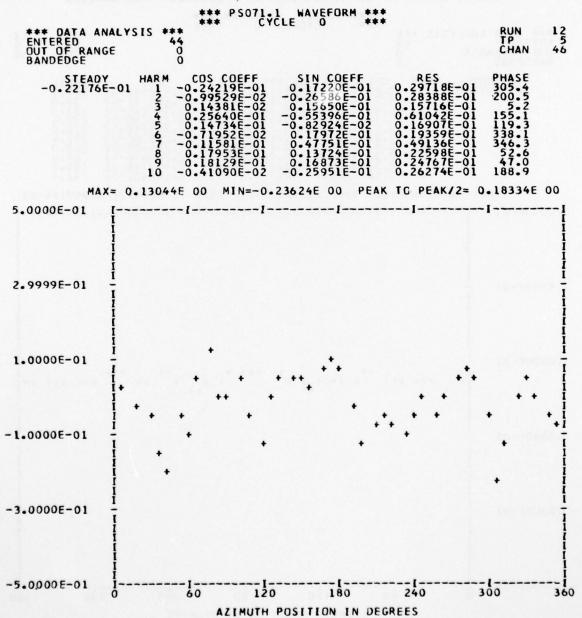


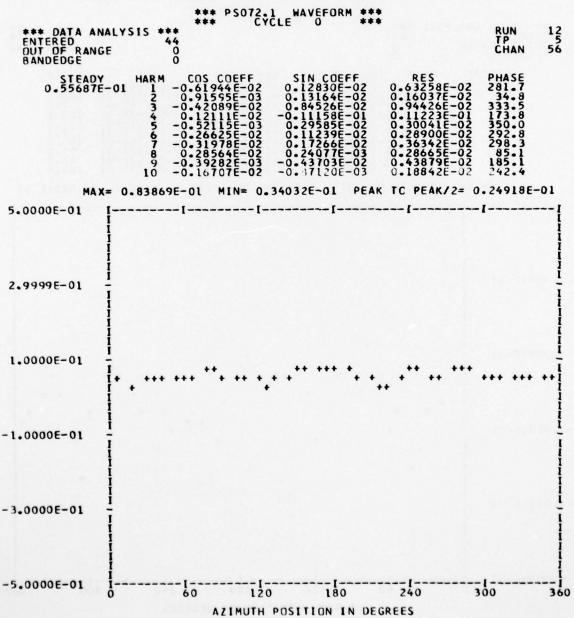




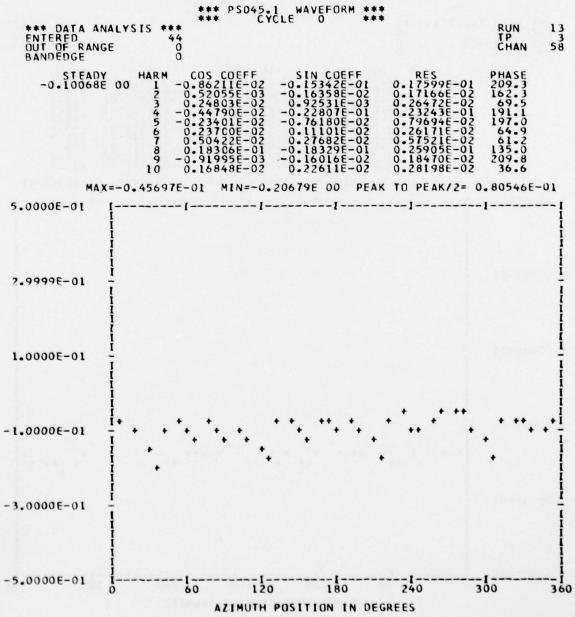


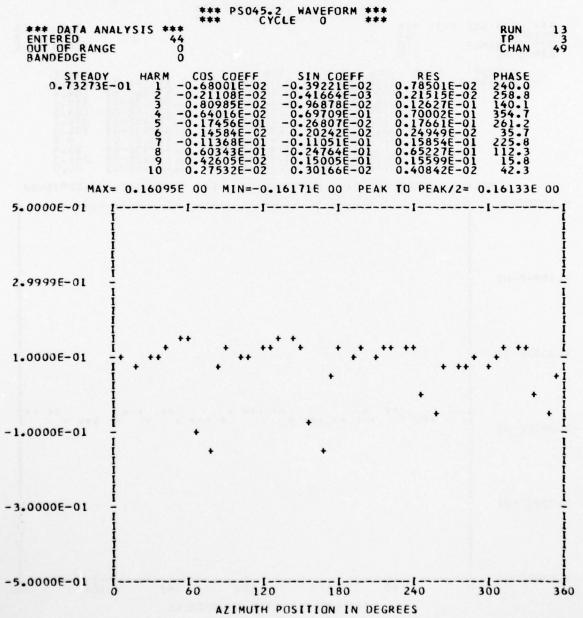


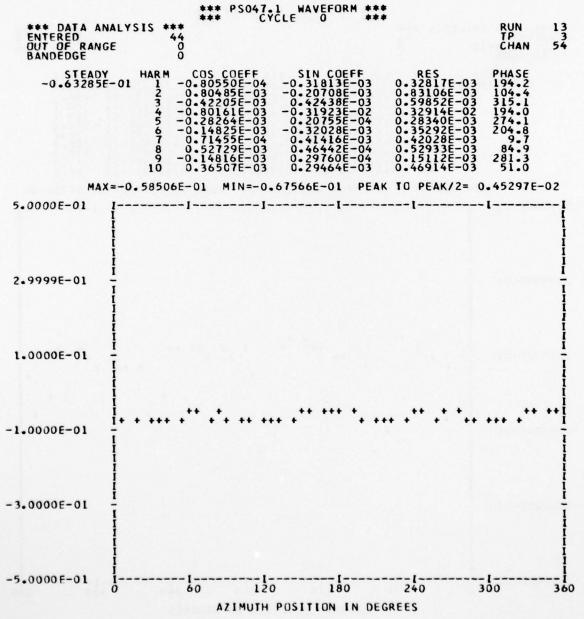


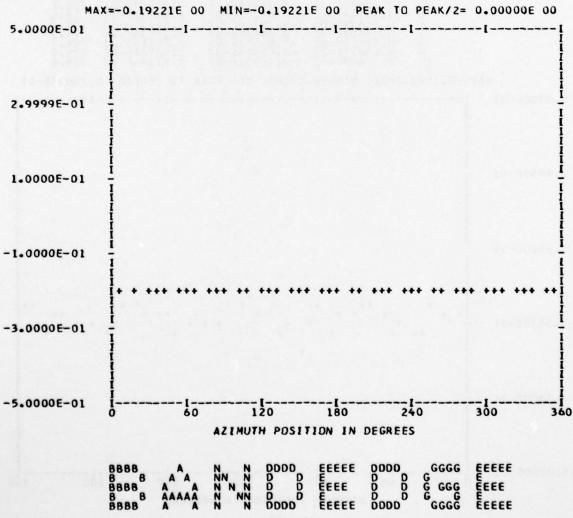


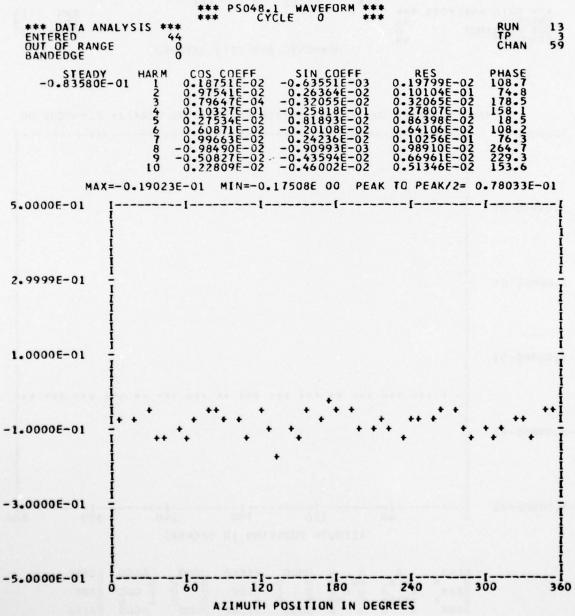
*** PS072.2 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	12 5 53
STEADY HARM COS COEFF SIN COEFF 0.35197E-02 0.36491E-02 2-0.60584E-02 0.19550E-02 0.63660E-02 3-0.32982E-02 0.34120E-02 0.47455E-02 4 0.19030E-01 0.25240E-02 0.19196E-01 5 0.39254E-02 -0.68574E-02 0.79015E-02 6-0.30668E-02 -0.13748E-02 0.33609E-02 7-0.45500E-02 0.52590E-03 0.45803E-02 8-0.63257E-03 0.55452E-02 0.55811E-02 9-0.28045E-02 -0.25524E-03 0.28161E-02 10 0.57031E-02 -0.56947E-02 0.80595E-02	PHASE 164.7 287.8 315.9 150.2 245.8 276.5 353.4 264.8 134.9	
MAX=-0.11115E 00 MIN=-0.22371E 00 PEAK TO PEAK/2= 0	-56276E-	01
2.9999E-01	tu virus	
-1.0000E-01 =	٠	++
-3.0000E-01 [
	000	360
AZIMUTH POSITION IN DEGREES		

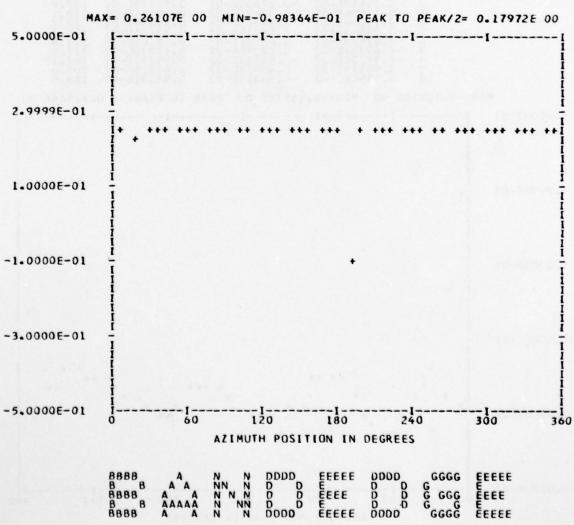




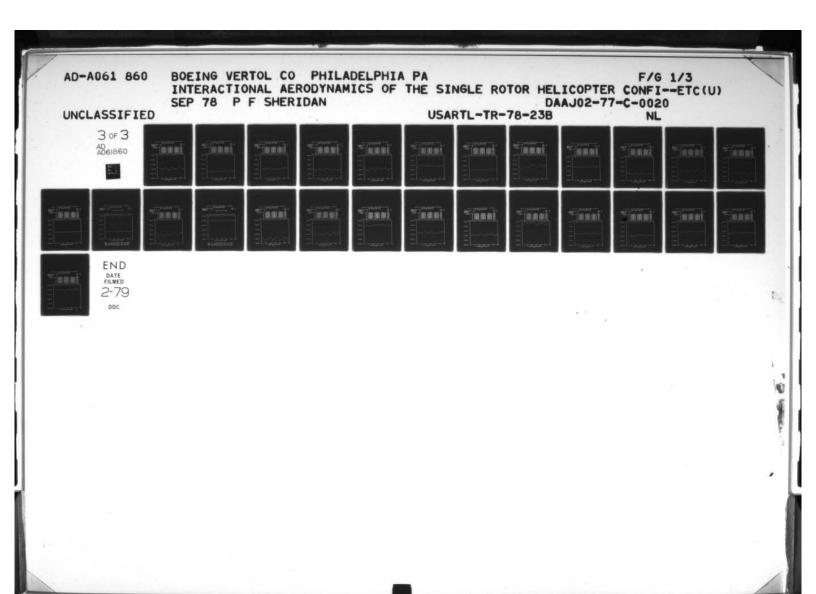


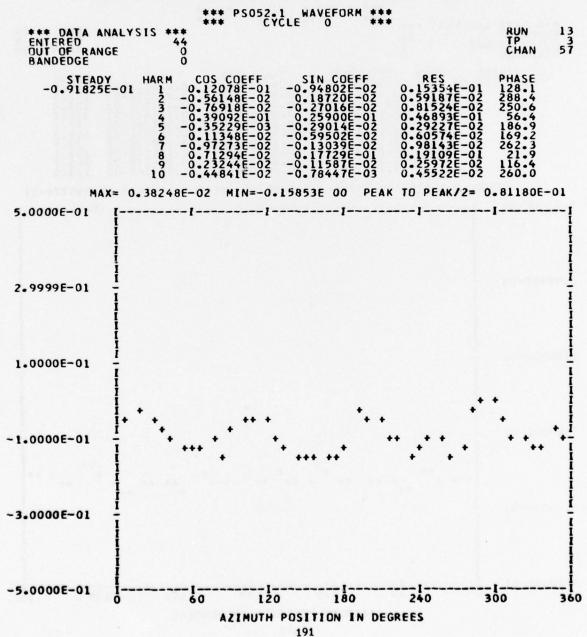


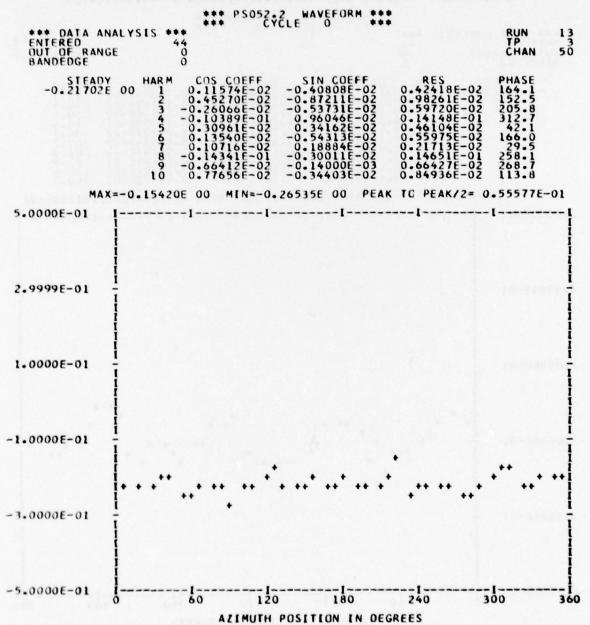




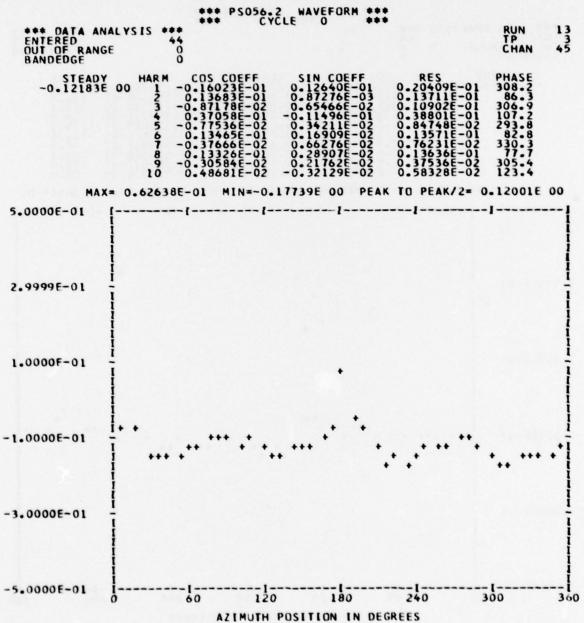
*** PS048.3 _WAVEFORM ***					
*** CYCLE 0 *** *** CYCLE 0 *** ENTERED 44 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	13 3 47			
STEADY HARM COS COEFF O.18925E-01 0.18934E-01 0.25141E 00 1 0.56699E-03 -0.18925E-01 0.18934E-01 0.17778E-01 0.15200E-01 0.47485E-01 0.49858E-01 0.15200E-01 0.47485E-01 0.49858E-01 0.67581E-02 0.67581E-02 0.67381E-02 0.93106E-01 0.30106E-01 0.301	PHASE 178.2 187.2 230.1 17.7 308.2 315.0 328.3 182.2 309.0 165.4				
MAX=-0.10550E 00 MIN=-0.35678E 00 PEAK TO PEAK/2= 0		00			
5.0000E-01	[I I I I I I			
2.9999E-01 - I		I I I I I I			
1.0000E-01					
-1.0000E-01		-			
-3.0000E-01 1 + + + + + + + + + + + + + + + + + +		**-			
-5.0000E-01 1	1	i 360			

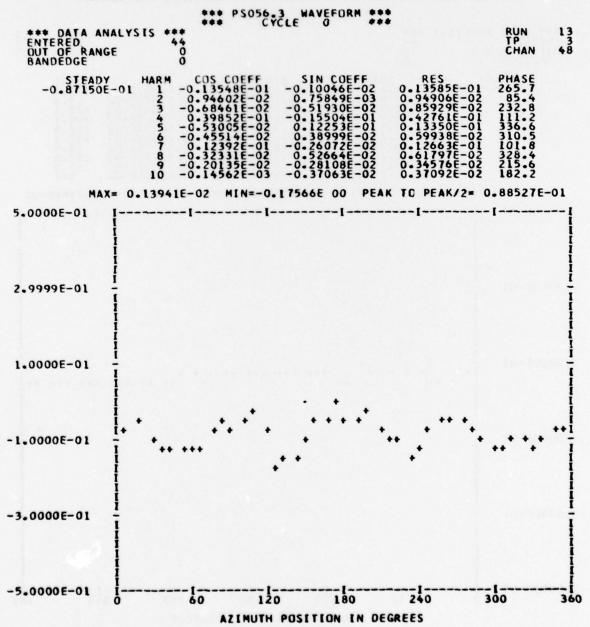


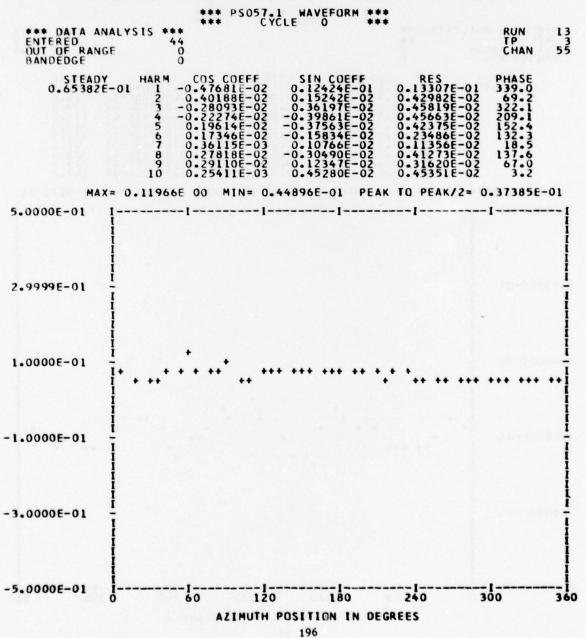


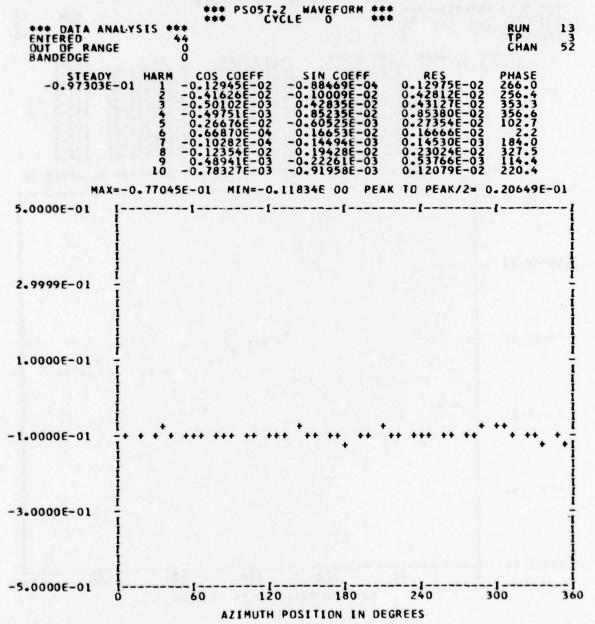


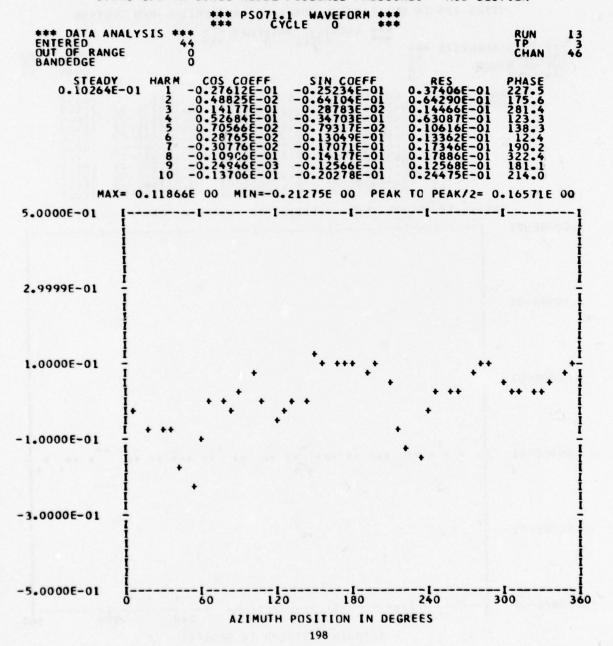
*** DATA ANALYSIS *** ENTERED 44	RUN	13
OUT OF RANGE O BANDEDGE O	CHAN	60
STEADY HARM COS COEFF SIN COEFF 0.17979E-01 0.17824E-01 -0.23525E-02 0.17979E-01 2 -0.14046E-01 -0.14048E-01 0.19866E-01 3 -0.71847E-02 -0.85080E-02 0.11135E-01 0.39665E-02 0.68633E-02 0.72271E-02 5 -0.12474E-01 0.21944E-02 0.12666E-01 6 0.10733E-01 -0.27602E-02 0.11083E-01 7 0.33597E-02 0.31860E-02 0.46302E-02 8 -0.41349E-02 -0.96895E-02 0.10534E-01 9 -0.53251E-02 -0.19364E-02 0.56663E-02 10 0.21883E-02 0.10172E-02 0.24131E-02	PHASE 97-5 224-9 220-1 279-9 104-4 46-5 203-1 250-0 65-0	
MAX=-0.24539E-01 MIN=-0.14584E 00 PEAK TO PEAK/2= 0	.60654E-	01
2.9999E-01	20-9409	
1.0000E-01		
-1.0000E-01 + + + + + + + + + + + + + + + + + + +	•• ••	•
-3.0000E-01		
-5.0000E-01 1	00	i 360

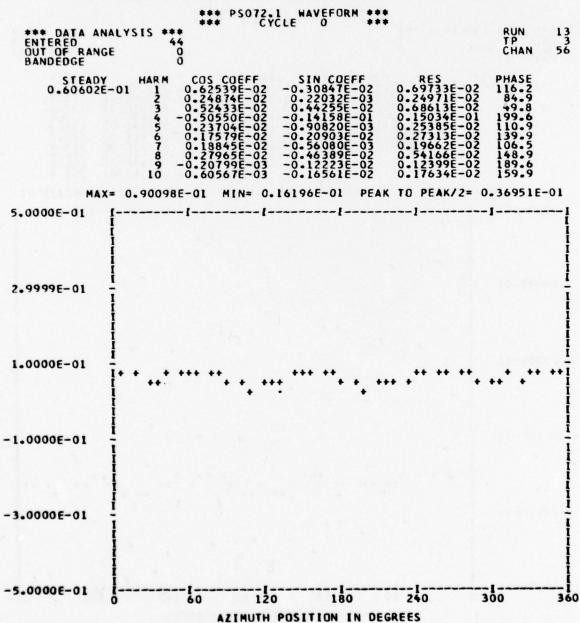


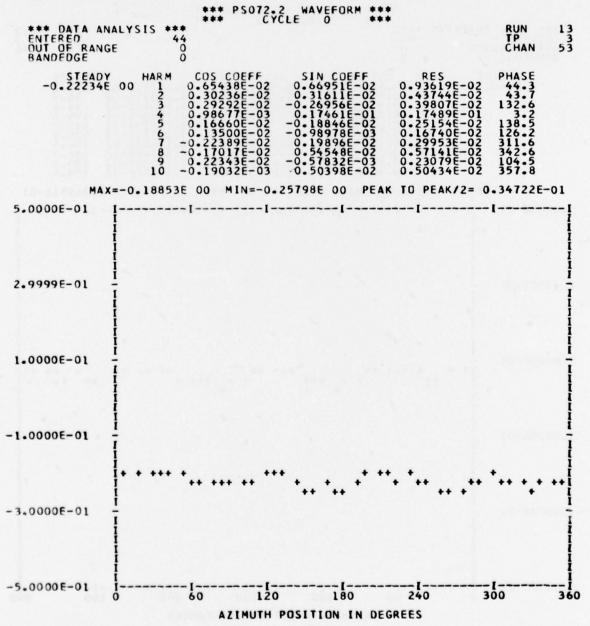




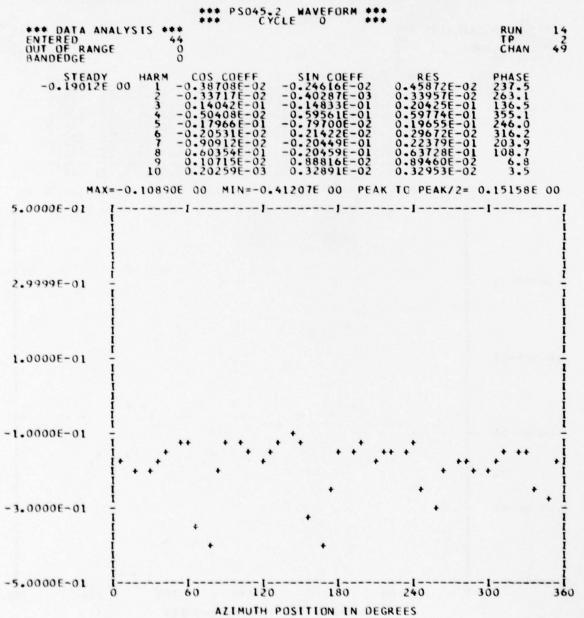


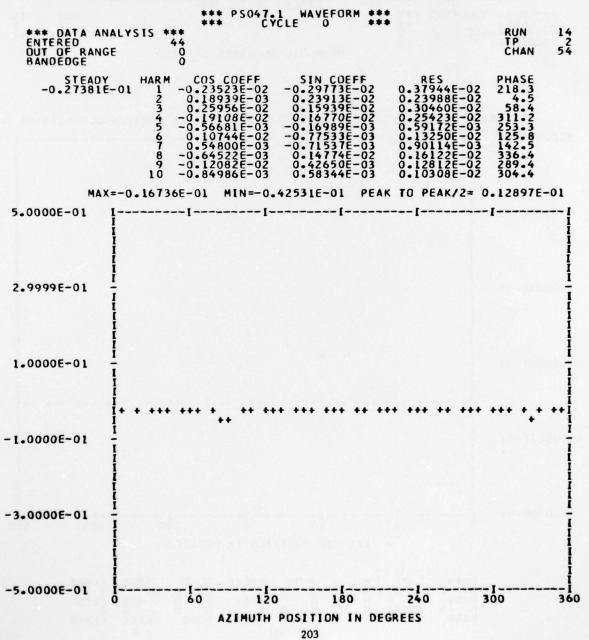




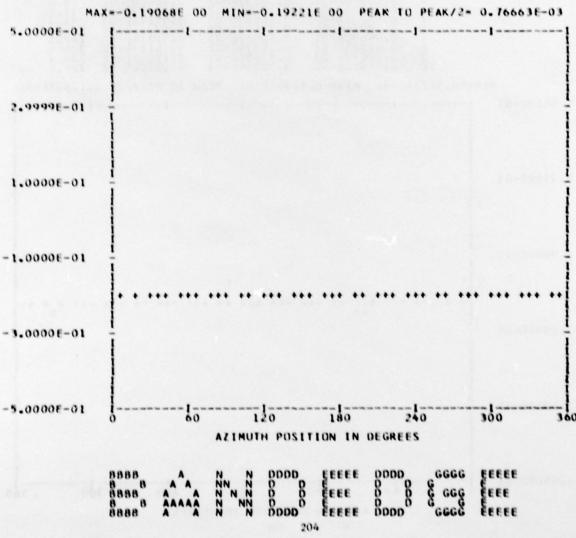


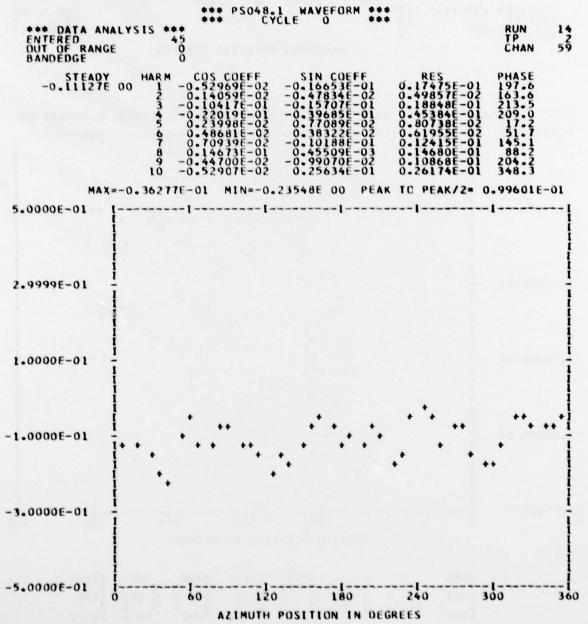
*** PSO45-1 WAVEFORM *** CYCLE 0 ***		
*** DATA ANALYSIS *** ENTERED 45 OUT OF RANGE 0 BANDEDGE 0	RUN TP CHAN	14 58
STEADY HARM COS COEFF SIN COEFF 0.11910E-01 2 -0.11779E-01 -0.29559E-02 0.12144E-01 3 -0.25825E-02 -0.75020E-02 0.79341E-02 4 -0.58411E-02 -0.41038E-01 0.41452E-01 5 0.18610E-02 0.18351E-03 0.18700E-02 6 -0.10646E-02 -0.54619E-03 0.11965E-02 7 0.94062E-02 -0.24919E-02 0.97307E-02 8 0.14879E-01 -0.33801E-01 0.36931E-01 9 0.11353E-02 0.10187E-01 0.10250E-01 10 -0.99805E-03 0.53353E-02 0.54279E-02	PHASE 228.4 255.9 198.9 188.1 84.3 242.8 104.8 156.2 6.3 349.4	
MAX=-0.50232E-02 MIN=-0.22388E 00 PEAK TO PEAK/2= 0.	10943E	00
2.9999E-01		
1.0000E-01		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
-1.0000€-01	* **• •	++
-3.0000E-01		
-5.0000E-01	00	360





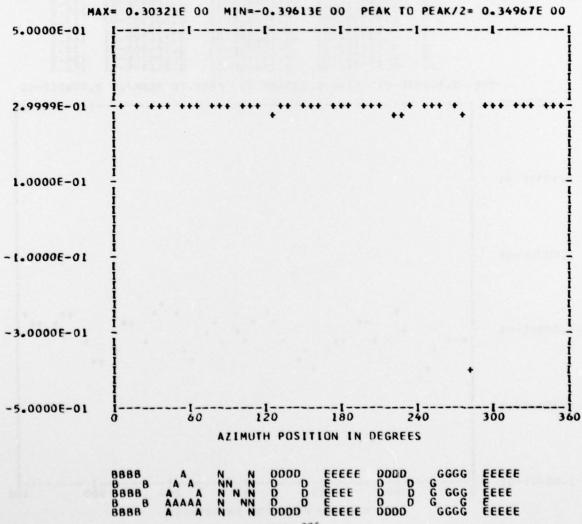
*** PSO47.2 WAVEFORM *** HARMONIC ANALYSIS SKIPPED

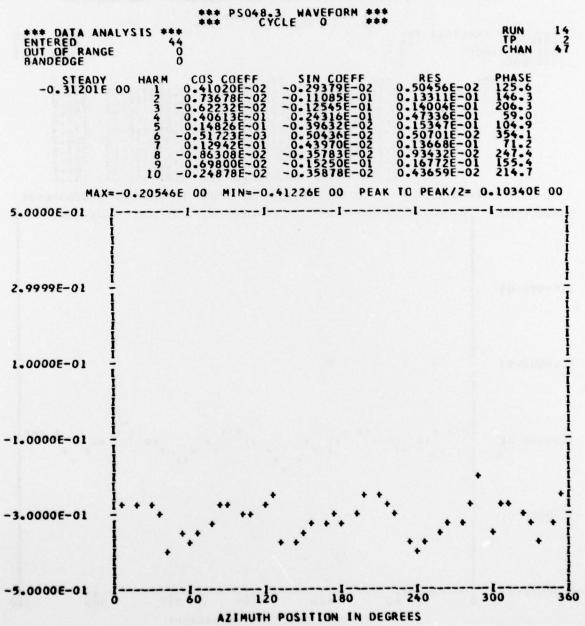


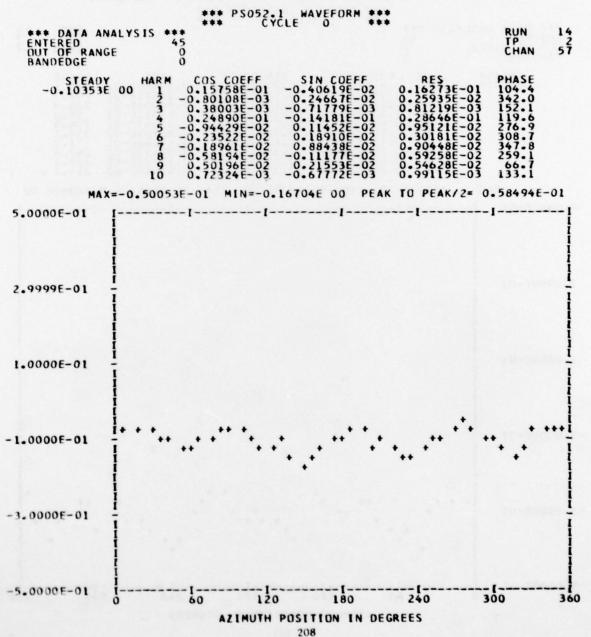


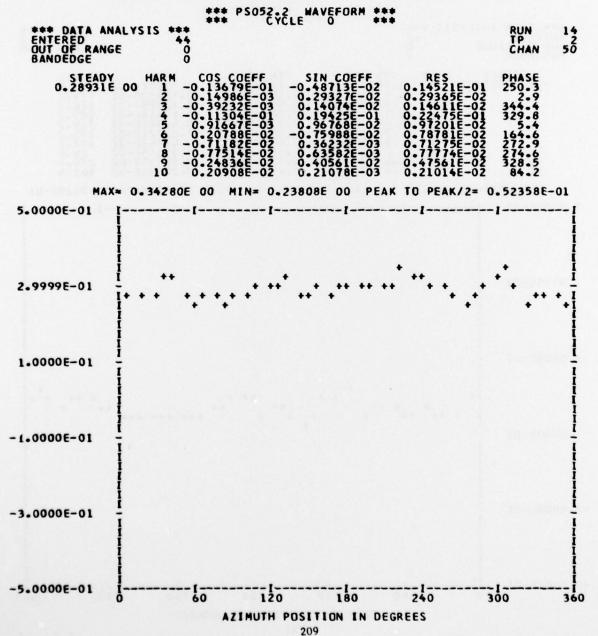
*** PSO48.2 MAVEFORM ***

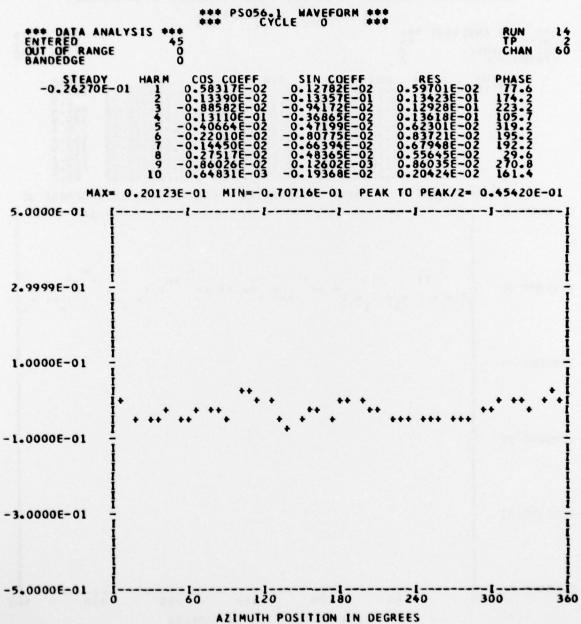
*** DATA ANALYSIS ***
ENTERED 45
OUT OF RANGE 0
BANDEDGE 35
HARMONIC ANALYSIS SKIPPED

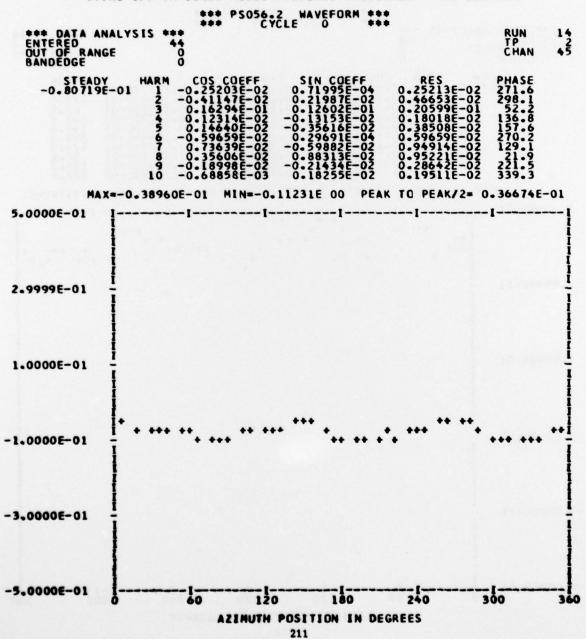


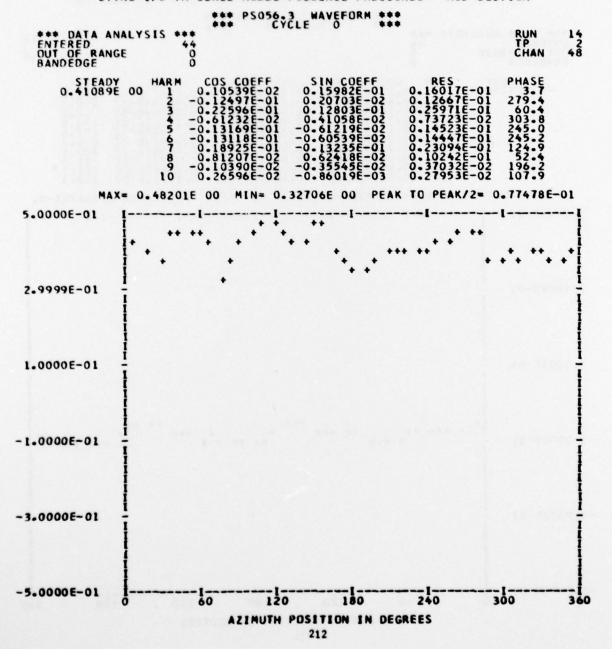


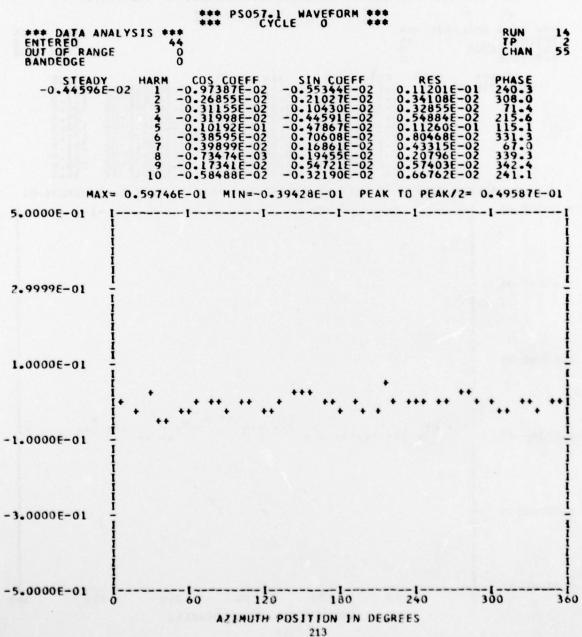


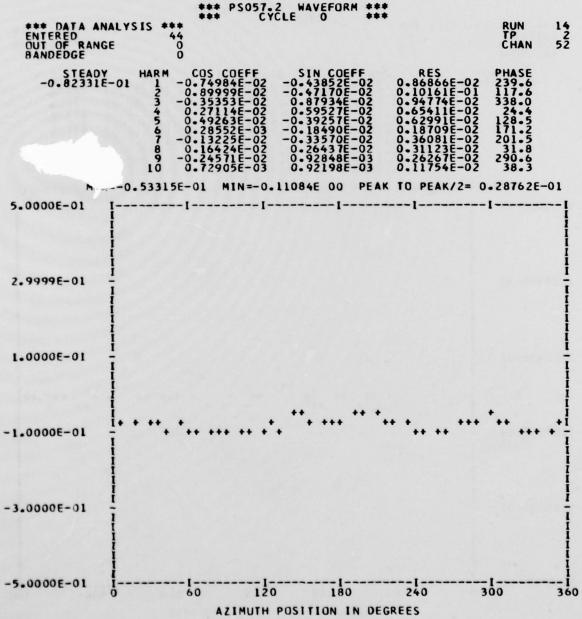


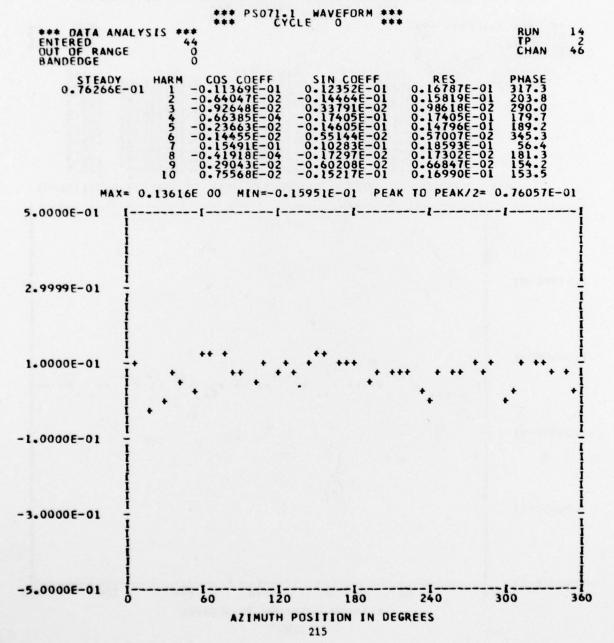












	*** PS072.1 WAVEFORM *** *** CYCLE 0 ***		
*** DATA ANA ENTERED OUT OF RANGE BANDEDGE	LYS1S *** 44	RUN TP CHAN	14 2 56
STEADY 0.26955E-	HARM COS COEFF SIN COEFF 0.2520E-02 0.22520E-02 0.35707E-02 0.60942E-03 0.36223E-02 0.72540E-04 -0.13212E-01 0.13212E-01 0.13212E-01 0.11921E-02 -0.39808E-02 0.41555E-02 0.16383E-02 -0.34561E-02 0.38247E-02 0.17881E-03 -0.18321E-02 0.18408E-02 0.67399E-02 0.59185E-02 0.89696E-02 0.91377E-03 -0.50224E-02 0.98596E-03	PHASE 240.2 279.6 310.3 179.6 163.3 205.3 174.4 48.7 190.3 238.8	
	0.55803E-01 MIN=-0.24262E-02 PEAK TO PEAK/2= 0.	29114E-0	
5.0000E-01 I	[[[[[
2.9999E-01 I			I
1.0000E-01		••••	- I - I - I - I - I - I - I - I - I - I
-1.0000E-01 - I			
-3.0000E-01			
-5:0000E-01 i	60 120 180 240 30 AZIMUTH POSITION IN DEGREES	0	-i 360

